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Dental Radiography.*

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Foreword.

Dental radiography is the science and art of taking pictures of the teeth and contiguous parts with the X-rays. Its place and value in the practice of modern dentistry will be dealt with later.

There is no text-book on this subject, and the writers of the magazine articles relating to it have made two great mistakes. First, they have attempted to treat a subject deserving several chapters, in one paper of from eight hundred to six thousand words. Second, and this is the result of the first, they have assumed that their readers possess a knowledge of electricity, of the production and nature of X-rays, and of the technic of picture-making, which the vast majority of the members of our profession do not possess in the slightest degree.

Therefore, if any dentist should desire to take up this work he would either have to attend a post-graduate course, which is expensive, or first read some text-books on electricity, followed by lengthy text-books on general X-ray work, which usually devote but one short chapter, if that much, to dental radiography; then the old files of dental journals; and lastly, the misleading literature published by unreliable manufacturers of X-ray outfits which he would be sure to obtain and study—all

of which is laborious and unsatisfactory. But whether a man expects to do X-ray work or not, if he be at all of a thoughtful turn of mind he cannot look at that wonderful product of science, the X-ray picture, without wondering how it is made and what uses can be made of it.

This work is written on the presumption that the reader knows absolutely nothing about the subject, and its object is to teach a working knowledge of dental radiography. The writer undertakes this task, not because of a long and extended experience, but rather because of his lack of it. He is not likely to write above the heads of his readers.

Before we can produce X-rays we must have at our disposal that something called electricity.

Electricity.

Electricity is a form of energy closely related to motion, light and heat. We know it is closely related to motion, light and heat because these forms of energy can be made to produce electricity, and electricity conversely can be made to produce them. Electricity is discernible to but one of the special senses, namely, feeling. It cannot be seen, heard, smelled or tasted. Victims of severe shocks have noted a peculiar taste, which they call the taste of the electricity, but it is my opinion, neither proved nor disproved as yet, that this taste is due to the presence of new chemical bodies formed in the saliva by electrolysis. In other words, the passage of the current of electricity through the saliva causes chemical changes to occur, resulting in the formation of new chemical bodies, and it is these new bodies, not the electricity, that is tasted.

Conductors. When electricity passes from one place to another the substance through which it passes is said to be a conductor. A substance through which electricity passes with great difficulty, when at all, is said to be a non-conductor. Metals are the best conductors of electricity. Silver is the best, then copper. Copper wire is the most used of any conductor of electricity. German silver carries electricity very reluctantly, and bismuth is the poorest conductor of the metals. It was formerly thought that electricity traveled on the surface of a conductor, but if this were true a round wire could be made to carry more current by simply flattening it and so making the surface greater; while, as a matter of fact, the flattened wire would carry less, because of the condensation of the metal incident to flattening. The human body is a conductor. Wood, glass and vulcanite are examples of non-conductors.

When electricity passes from one place to another through a conductor, what is known as the electric current is established.

Currents. There are four kinds of electric currents: (1) the continuous, constant, or direct current, commonly designated D.C.; (2) the pulsating; (3) the interrupted; (4) the alternating or oscillating, designated A.C.

The direct current is one in which the electricity is presumed to flow through the conductor in one direction, at a uniform rate of pressure.

The pulsating current is one in which the electricity flows through the conductor in one direction while in motion, but which is completely arrested in its flow at frequently recurrent intervals.

The alternating current is one in which the electricity flows through the conductor first in one direction, then in the other. When the current, flowing in a given direction, reverses, flows in the opposite direction, and then resumes its original direction of flow, it is said to have completed a cycle. The number of cycles occurring in a second determines the frequency of the current. We thus have, for example, a 60-cycle frequency current, making sixty complete alternations per second.

Potential. Electricity travels from one place to another because of a difference in potential. The term potential means latent, inactive, or stored-up energy. Take lightning as an example of traveling electricity. Why does it occur? One cloud has a potential, figuratively speaking, of say 30, another 20. These clouds approach close enough to one another so that electricity can jump the atmospheric gap between them, which it does, passing from the one with a potential of 30 to the one with a potential of 20 and equalizing the potential of each to 25. The light of lightning is caused by the resistance of the atmosphere to the passage of electricity. If such a thing were possible and an electric conductor stretched from the one cloud to the other, the potentials would be equalized as just described, but without the occurrence of the phenomenon called lightning, because the electricity would unostentatiously flow through the conductor instead of through the highly resistive atmosphere.

All electricity producing machines, then, simply create a comparatively high potential, so that when a path is afforded—*i. e.*, when conductors are attached to the machine—the electricity leaves, in its effort to equalize potential.

Velocity. Electricity travels at an inconceivably rapid rate of speed, instantaneous results being obtained hundreds of miles distant on pressure of a button. It is stated that the velocity of electricity is about the same as light, which latter travels about 186,000 miles per second. To comprehend this great speed compare it to the velocity of sound, which travels only 1,090 feet per second.

In dentistry and medicine the terms used can often be translated literally into their meaning. For example, "odontalgia" is a combination of two Greek words meaning tooth and pain; "tonsilectomy" is a combination of a Latin and a Greek word meaning tonsil and excision. Electrical terms are, however, derived principally from proper names. For example, volt, the unit of measurement of electric pressure, has no literal meaning at all, but is so called in honor of Alexander Volta, a great electrician. And so with the terms ohm, watt and ampere.

Volt.

When electricity leaves the electricity-producing, or, if you choose, potential-creating, machine, it passes into the conductors at a given pressure. This pressure is measured in volts, just as pressure in a water-pipe is measured in pounds. The volt, then, is the unit of measurement of pressure of electricity. Just what is a "unit of measurement"? Take, for example, the unit of linear measurement; it is called the "meter," and is one-ten-millionth of the distance from the equator to one of the earth's poles. The unit of linear measurement, then, the meter, is a definite name applied to a definite distance. So the volt is a definite name applied to a definite degree of electric pressure, or, of what means the same as electric pressure, electromotive force, designated E.M.F. This force is sufficient to maintain a current of electricity of one ampere (the unit of measurement of volume of electricity) through a resistance of one ohm (the unit of measurement of resistance to the flow of current offered by an electric conductor) in one second of time. Let us then fix this firmly in our minds. The volt is the unit of measurement of electromotive force, or pressure. Though it is not commonly used, the writer much prefers the word "pressure" to "force," believing it to more clearly express the meaning.

Ohm.

No conductor carries electricity without offering a certain amount of resistance to its flow. This resistance, which might be compared to the friction offered by the sides of a pipe to the flow of water, is measured in ohms. The ohm, then, is the unit of measurement of resistance offered to the flow of electricity by a conductor, and is the equivalent of the resistance afforded by a column of mercury having a cross-section of one square millimeter and a length of 106.28 centimeters, at a temperature of 0° C.

Ampere.

We have considered pressure and resistance. Now we come to the energy itself, which may be compared to the water in a waterpipe, and is measured in amperes. The ampere capacity of an electric conductor corresponds to the cross-section of a waterpipe, which latter is measured in

square inches. Thus the larger the pipe, which means of course more square inches in its cross-section, the more water it will carry; and so the larger the electric conductor of a given material the greater its ampere capacity, and the more electricity it will carry.

The analogy between the water in the waterpipe and the electricity in the conductor is not perfect, however. A given-sized pipe will carry a column of water of a given cross-section and no more, because water is practically non-compressive. When the flow of the water is opposed to gravity, as when drawing water from a faucet, this complete cross-section must be obtained, too—that is, the pipe must be full—before any

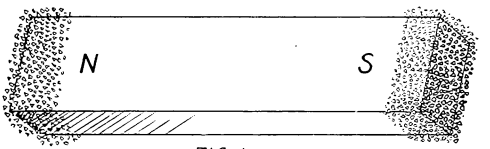


FIG. 1

pressure will establish a current through the pipe. Not so with electricity in a conductor. A wire which has a normal capacity of say 30 amperes will carry a current of 10, and it can be made to carry 40 or 50 by increasing the pressure, because electricity is compressible.

Amperage, or the volume of electricity carried in a conductor, depends on two things—the pressure of the current and the resistance of the conductor. Hence Ohm's law, which is that the volume of the current can be obtained by dividing the pressure by the resistance. In other words, the amperage can be obtained by dividing the volts by the ohms.

Problem: An electromotive pressure of 100 volts is acting against a resistance of 50 ohms. What is the ampere strength of the current?

Solution: 100 volts divided by 50 ohms equals 2 amperes.

To give the exact amount of electricity represented by the ampere, it is that amount which, when passed through a standard solution of silver nitrate in distilled water, will cause a deposition of metallic silver at the rate of 1.118 milligrams per second.

Watt.

Electromotive power (not electromotive pressure or force; note the word "power"), or the ability of a current to do work, depends on two things—the pressure measured in volts and the volume measured in amperes. This is also true in hydraulics. The amount of work a stream of water will do depends on pressure and volume. The watt is the unit of measurement of electromotive power, and the wattage of a current is obtained

by multiplying the volts by the amperes. Thus, if we had a current of one ampere under a pressure of one volt, one watt would be operative.

When 1,000 watts are active for an hour—that is, when a current 1,000 watts strong has been in motion, the current turned on, for one hour—the electrometer will register one kilowatt-hour. So bills for electricity are made out for so many kilowatt-hours.

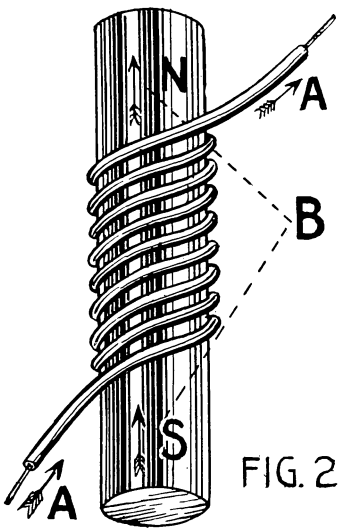


FIG. 2

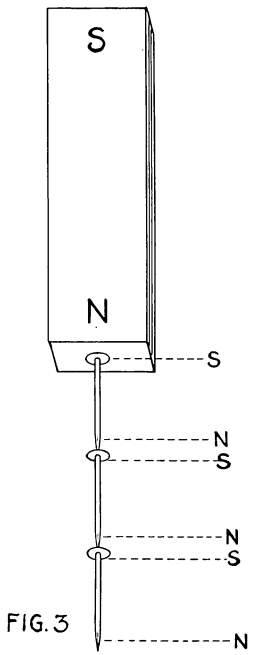


FIG. 3

Fig. 2. Arrows A represent the direction of flow of electric current. Arrows B represent the direction of flow of magnetic flux in the magnet.

Magnetism. Magnetism is a form of kinetic energy very closely related in its nature to electricity. Magnetism produces electricity, and vice versâ.

The substance in which this energy, or property, magnetism, resides is called a magnet.

If a bar of magnetized steel be dropped into iron filings, and then raised, the filings will adhere to the ends of the bar, but not to the center. (Fig. 1.)

The ends of the bar represent, respectively, the north, or positive, and the south, or negative, poles of the magnet. If, now, this bar be broken at its exact center, instead of having a half magnet all north

pole and another half magnet all south pole, we have two magnets with two poles each. If one of these magnets be broken at its center the same thing occurs, namely, two magnets, each one-half as large as the first, are made. This re-division can be repeated down to the molecule, which would have a north and a south pole.

Magnets are of two kinds—the natural magnet, or "loadstone," and the artificial magnet.

The earth may be considered a large magnet, the poles of this magnet being near the north and south poles of the earth. The natural magnet is iron ore, found in nature with all the properties of the magnet, and representing a portion of the great magnet, the earth.

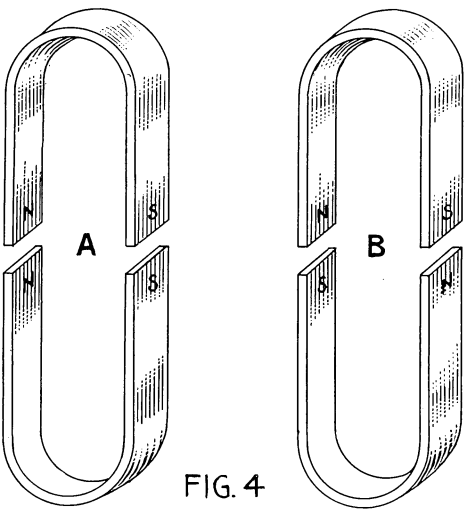


FIG. 4

Fig. 4. When poles are arranged as in A repulsion exists between the magnets. When poles are arranged as in B the magnets are attracted to one another with the magnetic flux of each north pole flowing into the south pole of the other magnet.

Artificial magnets are of four kinds—the electro-magnet, the permanent magnet, the temporary magnet and the induced magnet.

If a bar of soft iron be wrapped with insulated wire (covered with a non-conductor) and a current of electricity be sent through the wire, the iron bar becomes magnetized while the current passes through the conductor, but loses its magnetism when the current ceases to flow. Such a magnet is called an electro-magnet. (Fig. 2.) If the current be sent through the conductor in the opposite direction to that shown in the diagram, polarity of the magnet will be changed: the north pole will become the south pole and the south pole the north pole.

If hard steel, instead of soft iron, be used as the core and wrapped

with insulated wire and a current of electricity be sent through the wire for a great length of time, then the current shut off and the wire removed, it will be found that the steel retains its magnetism and will continue to retain it over a number of years. Such a magnet is called a permanent magnet, Figs. 1 and 4, for example, though it is not actually permanent and will lose its magnetism in time. The permanent magnet in greatest general use is the "horseshoe" magnet (Figs. 4 and 5), which is simply the bar magnet (Figs. 1 and 3) bent into horseshoe or staple shape.

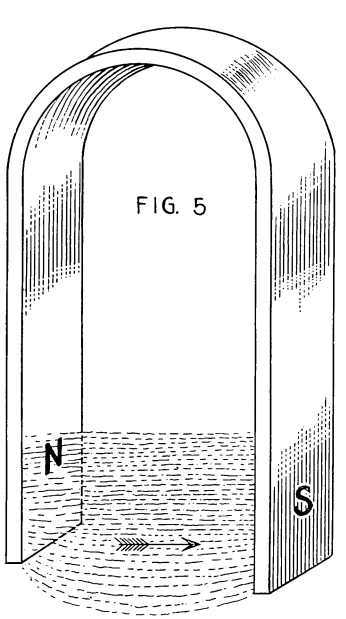


FIG. 5

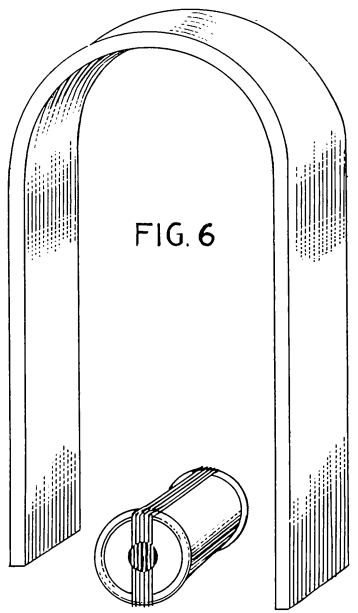


FIG. 6

Instead of using the electric current, a permanent magnet can be made by rubbing hard steel with another magnet.

If soft iron instead of hard steel be treated as the steel is treated to make a permanent magnet, a temporary magnet will be made. Temporary magnets lose their magnetism in a few months.

Fig. 3 shows a magnet holding three nails. As long as the magnet remains in contact with the first nail it will hold the second nail, and the second will hold the third. But remove the magnet and no attraction exists between the nails. While the magnet touches the first nail each nail is an induced magnet, with a north and south pole, as shown in the figure.

While either the north or south pole of a magnet will attract a piece of unmagnetized iron or steel, only unlike poles of two magnets will be

attracted to one another. Thus, if two north or two south poles of magnets be brought in close proximity repulsion instead of attraction exists between them. (Fig. 4.)

In 1831 Faraday discovered that when an electric conductor is set in motion so as to cut the lines of force of the magnet at right angles, an electric current is induced in the conductor.

Figure 5 shows the lines of force of a horseshoe magnet passing from the north to the south pole. Imagine now a spool wrapped with copper wire, not as thread is wound around a spool, but lengthwise of the spool, the wire passing over its ends. Place this spool between the poles of the

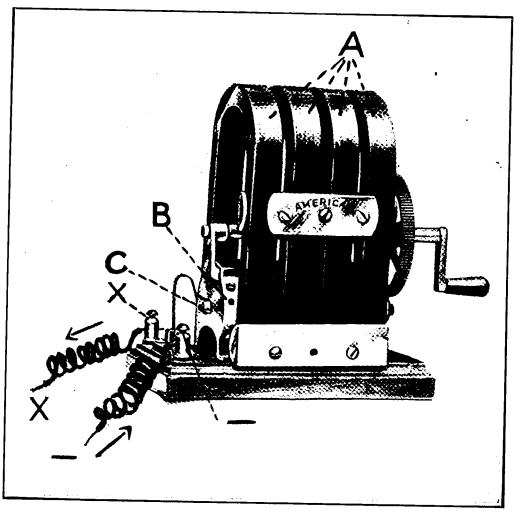


Fig. 7.

Fig. 7. Magneto-Dynamo. A, the magnets or field. B, casting surrounding revolving conductor or armature. C, appliance for outlet of electricity from armature. An alternating current is generated by this machine.

magnet, revolve it on its axis, and the copper wire—that is, the electric conductor—is made to cut the force of the magnet at right angles and an alternating current of electricity will be produced in the wire (Fig. 6), the current flowing in opposite directions as the different poles are passed. Add to this arrangement a means for carrying the current away from the apparatus and we have the magneto-dynamo, now very extensively used in automobiles. (Fig. 7.)

Dynamos.

Dynamos may be divided into two classes, the magneto-dynamo, just described, and the electro-dynamo.

All dynamos consist of three cardinal parts, to wit: the field, or mag-

nets; the armature, or revolving conductor, and the rings, or appliance for carrying off the electricity. If the current sent out is direct instead of alternating, a commutator instead of rings must be used. A commutator is an appliance which changes the alternating current induced in the armature into a direct current as it leaves the dynamo.

The electro-dynamo, an example of which is shown in Figure 8, differs in principle from the magneto-dynamo only in the kind of magnets

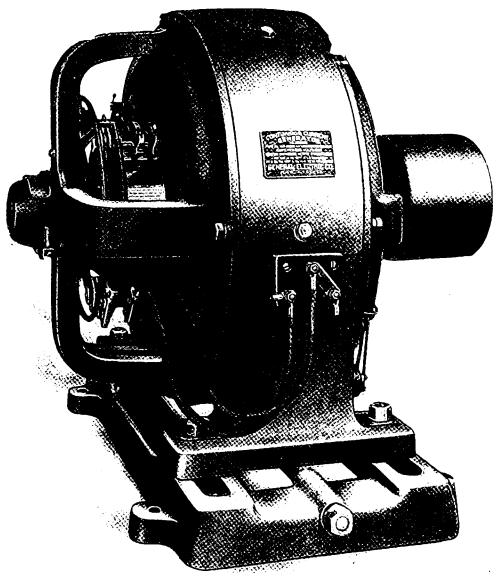


Fig. 8.

Fig. 8. A Direct Current Generator or Electro-Dynamo.

used. Permanent magnets are used in the magneto-dynamo, whereas electro-magnets are used in the electro-dynamo.

Immense electro-dynamos, or generators, as they are called, make our commercial currents, steam power being used to revolve their armatures. By commercial current is meant the electric current supplied to us by the electric light and power companies.

Let us trace a current of electricity throught what is known as the electric circuit. When the armature is revolved the potential at C, of Figure 7, rises. The potential of the positive wire attached to binding post + (which post is connected to C) is instantly raised to that of C, and

the current ceases to flow, potential being equalized between the armature and the positive wire. If now the positive wire of the high potential be brought in contact with the negative wire, which is of low potential, the current flows into the latter. The negative wire is attached to the negative binding post, which is connected to the magnets themselves. Thus the current passes through the negative wire into the magnets,

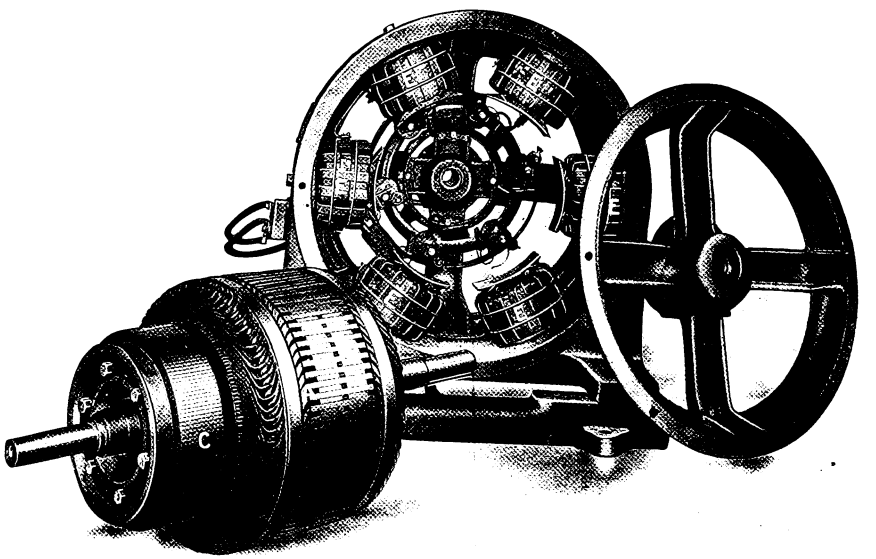


Fig. 9.

Fig. 9. Six Pole Direct Current Generator, parts disassembled. E, electro magnets with poles of different denominations directly opposite one another—the field. Large alternating current generators have as many as 40 poles in the field which revolves, the armature remaining stationary. A, armature. C, commutator

which have a low potential. The current will continue to flow, making a circuit from C, out through the positive wire, back through the negative wire, into the magnets until their (the magnets') potential is raised to that of C. If an incandescent light bulb be connected to the positive and negative wires the current will pass from the positive wire, through the bulb, and into the negative wire. As the electricity passes through the bulb it heats the filament of carbon to incandescence, producing light and some heat. Most of the electricity is used up in the production of the light and heat—this is true if the circuit is what it called "well balanced"—but what is not, travels in the negative wire toward the magnet, equalizing potential until it dissipates itself in the effort.

Commercial circuits supply either a D.C. (direct current) or an A.C. (alternating current). The wiring for the D.C. dynamo to the consumer is an intricate problem, difficult to understand. It is enough for us to know that the D.C. is supplied, as a rule, only to downtown districts of cities, by a circuit giving 110 volts' pressure, or a special three-wire circuit, which supplies either 110 or 220 volts, according to the manner of the connections made to the mains. The amperage depends on the size of the wires; the more amperage desired the larger the wires connecting to the mains must be.

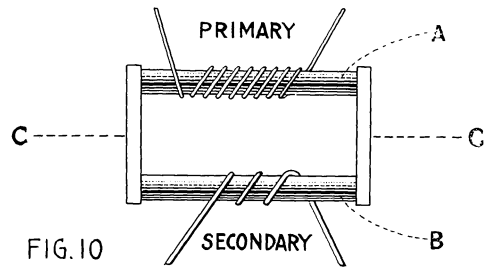


FIG. 10

The A.C. leaves the generator at a voltage of from 1,000 to 3,000, and flows in the mains at this pressure. Such great pressure is both dangerous and uselessly high for ordinary uses, such as lighting, running motors, operating X-ray machines and the like. So, by means of a transformer, the voltage is reduced to any desired strength, usually from 100 to 125 volts. The commercial A.C. is either 60 or 133-cycle, usually 60.

Since the principle involved in the transformer is quite similar to the one met with in X-ray machines, a description of it would not be out of place in this work. Figure 10 shows the plan of construction of a transformer. A, represents an iron core, around which is wrapped insulated wire. This is the primary winding through which passes the primary current at the high voltage of from 1,000 to 3,000. As always, the amperage depends on the size of the wire. B, represents another iron core, around which is also wrapped insulated wire. This is the secondary winding, through which the secondary current passes. C, shows soft iron connections between the two cores.

When the electric current is established in the primary winding a current is set up or induced in the secondary winding. Bear in mind there is no electric connection between primary and secondary windings. The primary current enters, and leaves unaltered except for a slight loss in amperage, but in its passage it induces a current in the secondary.

If the wire used in the secondary winding be of the same length and size as that used in the primary winding, the induced secondary current will be of practically the same voltage and amperage as the primary current. But if the wire in the secondary be shorter and larger, the induced current will be lower in voltage and higher in amperage. Or if the wire of the secondary winding be longer and smaller than the wire in

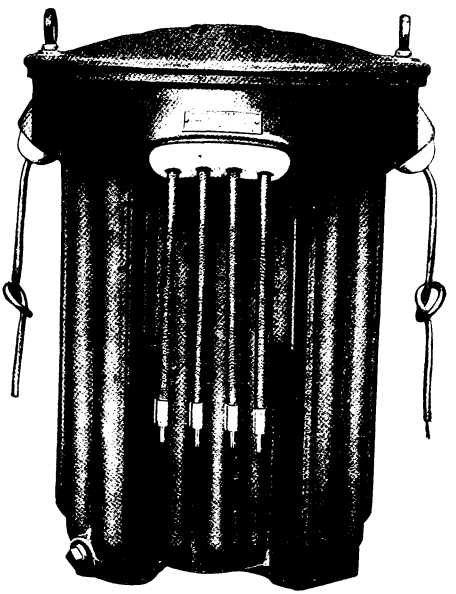


Fig. 11.

A Transformer.

the primary winding, the induced secondary current will be higher in voltage and lower in amperage than the primary current. The wattages of the primary and secondary currents remain practically the same. For example, suppose the voltage of the primary current is 1,000, the amperage 5, the wattage would be 5,000. Suppose now, by means of the transformer, the voltage is lowered to 100; there would be a raise in amperage to 50. Notice the wattage remains the same, 5,000. The figures do not represent what actually happens, since they do not take into account the loss of current due to the internal or intrinsic resistance of the transformer, but they do represent roughly the general principle of the action of the transformer.

A transformer which lowers voltage—the kind used on A.C. circuits between mains and consumer—is known as step-down transformer; one which raises voltage is a step-up transformer.

The transformer does not alter the nature of the current. That is, the secondary is an alternating current, the same as the primary, the change being only in voltage and amperage. Transformers cannot be used on a direct current.

The foregoing is calculated to give the reader a speaking acquaintance with electricity, the wonderful force which produces X-rays. Further treatises of the subject will be made as necessity demands. It will be noted that but one source of electricity has been considered, namely, dynamo electricity—that furnished by light and power companies. Be it known, however, that electricity can be produced by means other than the dynamo—by friction and chemical change, for examples. We have considered only the source of electricity which is used to operate the X-ray coils.

The Gold Inlay.*

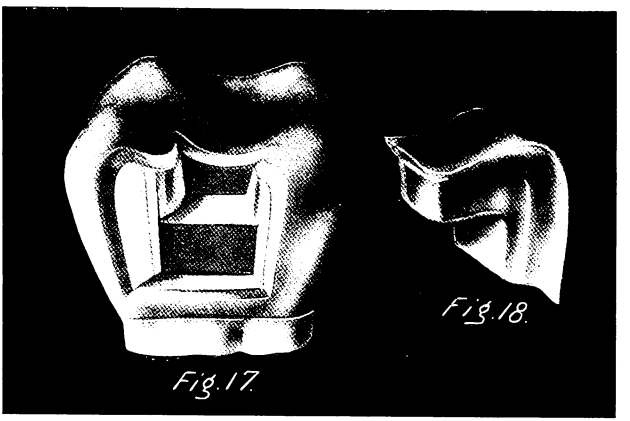
By Dr. J. V. Conzett.

The most insidious cavities with which we have to deal are the cavities occurring in the proximal surfaces of the bicuspids and molars, and they are the ones that we are called upon to treat more frequently than any other, if we except those occurring in the proximal surfaces of the incisors. By reason of their position they are not discovered by the patient until they are in an advanced state of decay. Not only do the patients themselves overlook them in their incipiency, but they are often overlooked by the dentist as well. The reason that cavities occur in these positions more frequently than in others is because just to the gingival of the contact point the organisms of decay are able to attach themselves to the teeth and protect themselves with the gelatinous membrane of Williams, for in this position they are protected from the frictional action of the food during mastication, from the action of the tongue and the muscles of the cheek, and even the toothbrush is unable to disturb them; therefore they are able to attach themselves and at their pleasure to attack the tissue of the teeth.

Treatment of First Stages of Caries.

In young persons the gum tissue comes down almost to the contact point, and, if there is an incipient decay, makes it difficult for the inexperienced to detect it. Thus the process of decay goes on until the sensitiveness to thermal changes, or the irritation of things sweet or sour makes it evident to the patient that something is wrong. Oftentimes when the attention of the dentist is called to the condition and the cavity is entered, the decay has penetrated so far that the pulp is in imminent danger of exposure. Then again the decay is not noticed in some cases until the strong enamel at the marginal ridge is broken down and a very large cavity is in immediate evidence. It is a common thing to have a patient present with a tremendous cavity in this position, with the statement that it came all at once. The moral is to carefully examine all such surfaces in all patients that present for examination, and, to make sure of suspected cases, obtain separation and know for a certainty whether decay exists or not. If it is evident that the organisms have attacked the teeth to the extent of causing the falling out of any enamel rods, the only safe method of treatment is to cut out

and fill. If the incipient decay is found before there has been a break in the continuity of the enamel walls, it will be possible to polish off the bacterial plaques, and by the institution of frequent and thorough polishing of the surfaces, prevent a re-establishing of the plaques upon the surface; but, if it is not possible to so change the conditions that decay will not continue without the substitution of an invulnerable substance for the vulnerable tooth material, then the earlier a filling is made and the susceptible condition thereby permanently corrected, the better.



When a patient presents with a cavity that has just penetrated the enamel, and a very small cavity is in evidence, the temptation is very great to treat the cavity as a small one, cut out to the extent of the decay and fill, but as we have seen in our discussion of the doctrine of extension for prevention, such a course will not benefit the patient, for sooner or later the decay will recur around the filling, because the conditions that made possible the primary decay have not been changed.

Preparation of Cavity.

If the decay is in the first stages, it will be easier to make the first entrance to the cavity from the occlusal surface. To do this it is my practice to enter the central pit with a sharp spear drill until the dentine is reached, and then with a dentate fissure bur cut a groove through the enamel to the cavity in the proximal surface, when the enamel can be readily broken down with a chisel. With an inverted cone bur the enamel is now undermined, and the undermined enamel again broken down with the chisel, this process to continue until the outline form has been obtained on the occlusal surface. The gingival extension is ob-

tained by taking a small round bur and cutting close to the enamel wall, sweeping back and forth, and at the same time cutting toward the gingival surface. From time to time the enamel that has thus been undermined can be broken away, and the process continued until the cavity has been extended sufficiently far gingivally. In the outline form the cavity is extended occlusally to take in the central pit, as will be seen in the illustration in Fig. 17. This being a cavity in the mesial surface

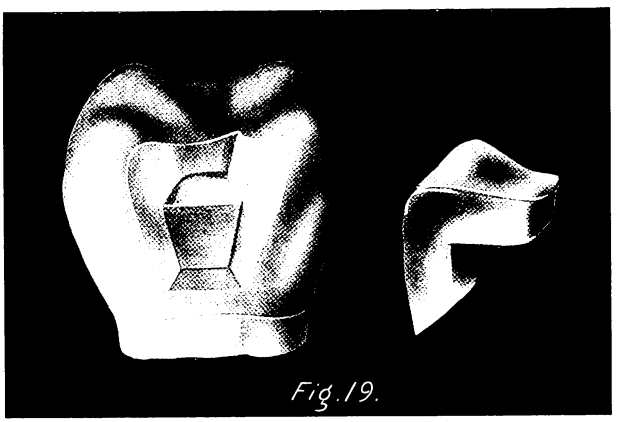


Fig. 19.

of an upper molar, will need to have a wider and deeper form than a cavity in the distal surface of the same tooth, for the reason that the force of occlusion comes more strongly upon the mesial surface of an upper, and the distal surface of a lower tooth, than the opposite surfaces of the same teeth. The same illustration (Fig. 17) will show the width and the depth of cutting that has been deemed advisable in the case under consideration. It will be noted that all of the margins of the cavity are placed in smooth territory. It is always bad practice to lay the margin of any filling in territory that is not smooth, for the reason that it is not possible to perfectly finish the margin, and more than that, any portion of the tooth on the occlusal surface that is not smooth, is either a part of a pit or fissure, or is a natural or acquired defect in the tooth, and if the margin were placed in such a position the probabilities of a recurrence of decay, owing to a faulty condition of the tooth structure immediately surrounding the filling, would be very great.

The outline form, on the proximal aspect, will be so placed that all of the margins of the cavity will be clear of the approximating tooth. The buccal and lingual margins will be cut out so far that the margins

of the finished filling will be kept clean by the friction of the food as it passes over them during mastication. The gingival margin will be cut down far enough to allow the gum to cover the margin in the finished filling. Fig. 18 is the inlay for cavity shown in Fig. 17.

Incorrect Cavity Preparation.

I am more and more impressed with the need of emphasizing the necessity of a careful extension of the margins at the lingou- and bucco-gingival angles. Since commencing this paper a patient has presented with a large number of inlays that were made by an eastern man of considerable reputation, and every one of the inlays that had been made was in error in this particular; that is, all of the gingival angles in all of the cavities were so far within the embrasures that a recurrence of decay was sure to take place as soon as a period of susceptibility had arrived, and although the inlays had been in but a few months, I am compelled to remove a number of them already, because of this defect.

In order to illustrate this error, which I count as one of the gravest errors in the filling of teeth, the next illustration, Fig. 19, will show a cavity as it is prepared by many of the men who are doing inlay work to-day, and is the cavity that is the subject of the criticism of the text. It will be noticed that the walls of the cavity converge as they approach the gingival seat, making the cavity of a cone shape. This is undoubtedly done because of the belief that it is necessary to have the cavity of such shape for the model to draw. It *is* necessary, of course, that the model should draw without distortion, but it is *not* necessary to have the cavity of cone, or saucer shape. The wax will draw out of a cavity in any case in which there has been no undercut. The walls may be perfectly parallel and of a perfect box shape, and yet the wax model will come out clean and with no distortion, if care is exercised in its removal. This form of cavity preparation is faulty not only because of the improper outline form, but the internal preparation necessary for such an outline form is such that a minimum amount of retention is secured. It is also faulty, as will be observed, in that the enamel walls are not beveled, and there is a "but" joint at the gingival margin.

Another very faulty preparation, and one that is very common, is the one illustrated in Fig. 20. In this preparation there has been no attempt to cut a step in the occlusal surface, and the retention is produced by grooves cut in the bucco- and linguo- axial walls. The whole cavity is of a rounding shape, and has evidently been made with round burs. The same mistake in regard to the outline form is made in this preparation that has been made in the one in Fig. 19; that is, the gingi-

val angles are too far within the embrasures, and are within the area of susceptibility.

This is one of the weakest forms of preparation for any kind of filling, and is one that we are frequently called upon to correct, so somebody must be teaching it; but wherever attention has been called to it, the teachers of operative dentistry have always entered a disclaimer, and yet we meet with this form of abomination almost every day in some form or other. Let the rule of flat seats and parallel walls enter ab-

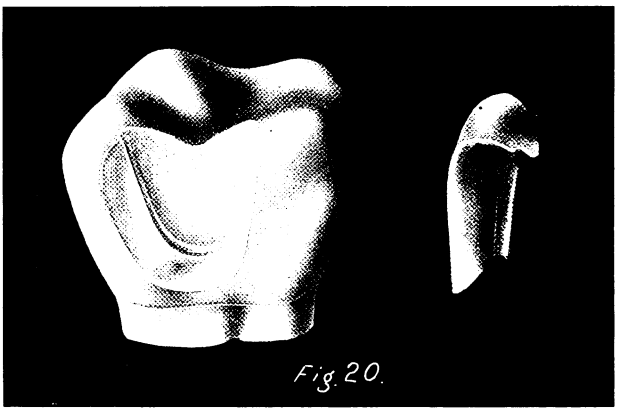


Fig. 20.

solutely into the practice of all sorts of cavity preparation, for whatever material that is to be placed within the cavity, and failures from this sort of preparation will cease.

Preparation for Retention.

The retentive form for a cavity in this surface will partake of the classical form of parallel walls and flat seats, of course; it only remains for us to understand the method of obtaining such a form. The seat in the occlusal step is formed with an inverted cone bur of as large size as the cavity will permit. It is usual in my practice to use a No. 39 for a molar preparation. With this bur the seat is made perfectly flat, and then with a chisel the walls are paralleled, making them as nearly at right angles with the seat in the occlusal step as it is possible to make them. A very useful instrument for obtaining this effect is the inlay bur that is now offered to the profession by the bur makers; it may be obtained in the plain or the dentate forms, and is used a great deal in my practice. With one of these burs the walls may be squared

up very quickly and perfectly, but should be followed by a chisel or hoe to smooth the dentine that has been left rough by the bur. The gingival seat is also flattened with a large inverted cone bur, very frequently the same one that has been used to make the seat in the occlusal step. The axial walls in the proximal surface may be brought to a parallel with an inlay bur in the same manner that the walls in the occlusal step have been paralleled. Care must be exercised in the use of these burs, that they be held in the proper position so that they may not undercut, or, on the other hand, may not make the cavity of a cone shape, which is the greater tendency. It is always well in all positions to follow the bur with a sharp hand instrument, for such a tool in the well-trained hand is capable of accomplishing more perfect work than any other instrument that has yet been devised.

Resistance Form.

The resistance form is largely comprehended in the retention form in this particular case, and yet there are some observations that will make us a little careful to see that the resistance form in this particular case is of sufficient width, depth, and generally retentive form to resist the peculiar stress that will fall upon a filling placed in a cavity in this position. We saw that the stress of occlusion was greater upon a filling placed in the mesial surface of an upper molar than on one placed within the distal surface of the same tooth, by reason of the fact that the mandible in closing does so with a movement that is at the same time upward and forward. So the stress tends to displace a filling that is in the mesial surface of an upper tooth, in a direction away from the tooth; therefore, it will be necessary to have the retentive form of such a nature that it will be able to resist such displacement. The occlusal seat must be of sufficient depth to give to the finished inlay a sufficient body of gold to resist the forces of occlusion, as well as to give sufficient retention, for we know that gold has a tendency to flow under stress, and if there is not a large enough body of gold in the filling or inlay, the forces of occlusion will so change the shape of the filling or inlay that it will become useless as a preservative. While this is admittedly true of the hammered filling, it is doubly true of the cast filling, for gold is in its softest condition when it has been melted and allowed to cool. It becomes tempered in the process of hammering or malleting, so that a hammered filling is a harder filling than an inlay, although it will not have the density. Therefore, if we are to use pure gold, which is a mistake if the inlay is to occupy a position of any considerable stress, to accomplish the same result, we must use a greater body of the same than we would in a hammered filling. In all cases the cavity should penetrate the enamel and be well anchored within the body of the den-

tine, and in positions of stress, such as the case under consideration, the depth should be considerable.

Inasmuch as the displacement tendency is from the distal, it will be well to make the general form of the occlusal step of a dove-tail shape from the distal portion of the step toward the mesial; that is, have the step a little wider toward the distal than it is toward the mesial surface,

as will be seen in the illustrations (Figs. 17 and 18). The proximal portion of the filling plays practically no part in the resistance form, and from this viewpoint can be passed.

Cavo-Surface Angle.

The cavo-surface angle must be carefully beveled all around the cavity, making the bevel long, that it may have the greatest strength of gold to properly withstand the stress brought to bear upon it, and also that it may be strong enough to perfectly protect the enamel beneath it.

It is particularly essential to have a good bevel at the gingival surface that the rods which here incline rootwards may be protected, and that the preparation which this gives will cause the finished inlay to have an edge that comes down over the margin, giving it the very best protection, and allowing of the possibility of perfectly burnishing the gold to the surface of the tooth after the cementation of the inlay. The illustrations of the cavity show the cavo-surface angle, and in Fig. 21 is seen a sectional view of the same cavity, which shows the cavo-surface angle in section, at the gingival margin and also at the occlusal surface. It also shows the depth and inclination of the occlusal step and the mesio-axial wall.

A Different View as to the Origin and Treatment of Pyorrhoea Alveolaris.

By Chas. A. Du Bois, D.D.S., New York City.

Genuine pyorrhœa alveolaris is a disease of the tooth-sockets, in which a flow of pus from the alveoli is the principal characteristic and diagnostic symptom; a calcarious serumal deposit is also generally found upon the roots of the affected teeth; sometimes, however, this deposit is absent, and the roots of the teeth are as clean as if they had been polished.

Pyorrhœa, according to my judgment, is only an oral manifestation, or symptom, of some general constitutional disorder, caused by auto-intoxication. In other words, nature has made a vent for the excretion of autotoxins from the system, of which the latter has not been able to rid itself through the proper organs.

In the opinion of many practitioners and specialists on pyorrhœa, it is simply a disease of filth, due to neglect and uncleanliness, or to irregularity and malocclusion of the teeth, these acting as local irritants, causing a local disease; therefore, local and prophylactic treatment, they claim, is all that is needed to attain a cure of the trouble. All mental efforts and scientific research work of these practitioners, I venture to say, have generally been made in a limited direction, their endeavors being to establish local causes, instead of looking for constitutional ones. They have been treating symptoms only, instead of searching for the real and deeper-seated causes of this disease.

In a practice of over thirty years, I have seen mouths, where, in spite of every effort made to keep them clean, pyorrhœa was unmistakably evident; while, on the other hand, I have seen very filthy mouths, the teeth covered with salivary calculi, from the irritation of which the gums were receding; also, irregularity and malocclusion were observed, and yet, in spite of all this, pyorrhœa was conspicuous only by its total absence.

A question: Why should pyorrhœa recur, as is very often the case, after an alleged cure by thorough local treatment and instrumentation, and where the patient co-operated with the dentist, trying faithfully to keep teeth and gums clean and healthy? I ask, why should it recur, unless there be some other hidden causes that seem not, as yet, to have been discovered?

The favorite argument is, that if the affected teeth were extracted the gums would heal, and that would end the pyorrhœa; yes, pyorrhœa, *per se,* will disappear, but nature will find some other outlet for the evacuation of this systemic poison. Should, for instance, as is sometimes the case, the mucous membranes be chosen by the system as the excretory organs for these toxins, we would have catarrh of all kinds developing, wherever mucous membranes are found; at any rate, some other organs would be selected to help to relieve the body of the retained poisons.

Starch Poisoning A Cause of Pyorrhœa.

As many other diseases have, I believe that pyorrhœa also has, an origin in chronic auto-intoxication, due principally to an overindulgence in starchy foods, causing what might be termed "starch-poisoning." This is a constitutional derangement, brought on by a fermentative process of the starchy contents of the stomach and the alimentary tract; in rheumatism, this process is aided by septic absorption of decomposed food-substances accumulated in the lower bowels.

When the system is overloaded with (starch) poison, kind nature always tries to get rid of it in some other way, if the natural organs of excretion are already overworked, and therefore sluggish and insufficient. It substitutes other organs to do this work, choosing, as a rule, the least resisting ones, generally end-organs, which serve as scavengers, to rid the body of autotoxins. The alveoli, being end-organs, the pus, a product of auto-toxemia, finds an exit at these naturally weak points.

I have found that starch, sugar and fat are food-substances that should be partaken of very sparingly after middle life, as the system can not take care of them if overindulged in; the consequences of such overindulgence invariably terminate in auto-intoxication, manifesting itself in many different ways.

Diet During Treatment of Pyorrhœa.

My conclusions are, that a regulated and rational diet will tend to eradicate pyorrhœa, as well as many other disorders, from the human system. It goes without saying, that local medicinal treatment, as well as a thorough removal of root deposits, if present, in conjunction with proper dietary measures, are absolutely required to establish a permanent cure of pyorrhœa alveolaris.

General Remarks.

Pyorrhœa is nearly always associated with general rheumatic conditions, as a result of auto-toxemia.

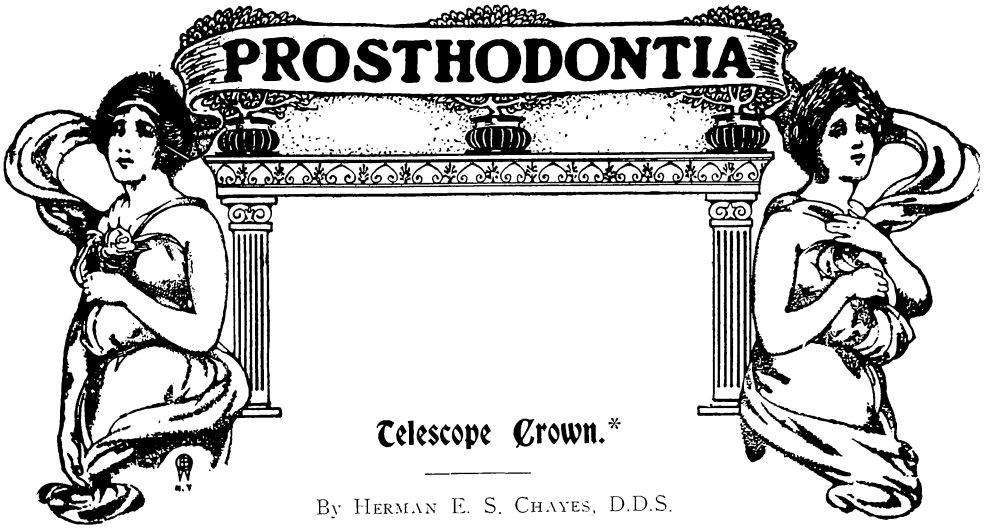
The oral cavity and its environs are perfect symptomatic indicators

of auto-intoxication, a few symptoms of which include: pyorrhœa, cancrum oris (aphthæ), stomatitis, gingivitis, tonsilitis, etc., etc.

The results of a faulty diet are: faulty digestion, faulty assimilation and faulty metabolism, the consequences of which are auto-toxemia, which again is the progenitor of all kinds of diseases.

According to Dr. J. H. Tilden, of Denver, Colo. (to whose teachings I am greatly indebted, and who, in my opinion, is the greatest living authority on dietetics), starch-bearing food is the staff of life up to the twenty-fifth year, but after the fortieth year it is more likely to become the staff of death.

If this short paper will stimulate those interested in scientific research to make their investigations on pyorrhœa on a more general basis, my object for writing it will have been attained.



Telescope Crown.*

By Herman E. S. Chayes, D.D.S.

Two conditions may arise in the mouth which may call for extensive restoration and the application of the telescope molar crown for abutment purposes. Two conditions which, while similar in result, call for an entirely different procedure or method in bringing about the abutment desired, so that really we must consider two kinds of telescope crowns; one kind we have disposed of in the preceding article, and the other we shall take up now.

The first telescope crown, or the one already described, was made for a molar tooth, the natural crown of which was more or less intact; that is, with the exception of the cavity created in the process of extirpation of the pulp, the tooth was really sound, and the loss of all of its tooth structure was due to the mechanical abrasion, purposely brought about by the operator in order to complete his central geometric solid figure plus the subgingival shoulder required for the proper execution of the work.

Crowning Badly Broken Down Molars.

We are frequently confronted with a condition presenting broken-down molar teeth which, in cases of extensive restorations, become invaluable to us for abutment purposes. The breaking down process in these teeth may have progressed to a degree until the crowns have been lost, leaving nothing but the roots, which may even have become involved in this destructive process. The preparation of such roots, for the purpose of making them useful for abutments, involves a somewhat different, and perhaps more difficult, pro-

cedure than the preparation of sound teeth for the reception of telescope crowns. In the first place, all decayed tooth structure must be removed regardless of its extent; a dressing must be sealed in the pulp chamber before any attempt is made to go up into the pulp canals, and if the decayed matter extend subgingivally, all soft structure must be carefully forced away from the root by packing the pulp chamber and subgingival area with baseplate gutta percha. The patient is dismissed for a period of two or more days, and at the next sitting a thorough cleansing of the pulp chamber and of the pulp canals is undertaken. The dressing of the subgingival area of the root is continued with burs and small stones until that wall stands at an angle of about 30 degrees to the gingival plane of the gingival third of that tooth (which, of course, must be imagined, since the tooth is altogether broken down); the dressing down of the rest of the root is continued with burs and small stones in such a manner that the surface produced upon the face of that root be at an angle of 60 degrees to the subgingival circumference, marking the beginning of that sloping surface. A band of 38 gauge platinum is carefully fitted around the root, and allowed to extend subgingivally to the subgingival circumference, which marks the beginning of the root preparation. The ends of the root canals are filled, and then more or less reamed out until they will admit 25 or 26 gauge (Brown and Sharp) iridio platinum wire, bent in the form of a staple, or in individual pieces threaded to their full length, and going as far up into the root canals as their divergence from the parallel will permit; this staple, or these individual wires are allowed to extend somewhat below the morsal plane of the root.

A cone of inlay wax, softened in the alcohol flame, is forced against the root surface, confined and circumscribed by the platinum band, regardless of the contour of the gingival circumference of the root. This band and staple-carrying inlay is chilled with an ice-water spray and removed from the mouth. Part of the outer surface of the band is covered with a thin layer of wax for the purpose of gaining strength. The whole of it is then mounted upon the sprue former, invested and cast. It is finished with the proper stones, files, discs, etc., etc., and tried in the mouth; the morsal surface of it is filed, so that it will present an absolutely horizontal plane at about the gingival plane of the gingival third of the tooth, and a piece of clasp metal, 24 gauge (Brown and Sharp), of a height one-sixteenth of an inch less than the space existing between the finished staple-carrying inlay, and the morsal surface of the antagonizing tooth is then so bent upon itself that it will conform in general outline to the circumference of the band carried by the inlay, but one-sixteenth of an inch smaller in circumferential area

than the band itself. This piece of clasp metal is now attached to the morsal surface of the staple and band-carrying inlay with 22-carat solder; the whole of it is again finished with discs, and care is taken to have the alignment of the band of clasp metal vertical to the morsal plane of the horizontal surface of the inlay, so that every line within the walls of that clasp metal band shall be at right angles to some point of the morsal surface of the inlay.

The appliance is tried in the mouth upon the root, the patient is asked to occlude, and the distance between the morsal edge of the vertical clasp metal band and the morsal surface of occluding and antag-

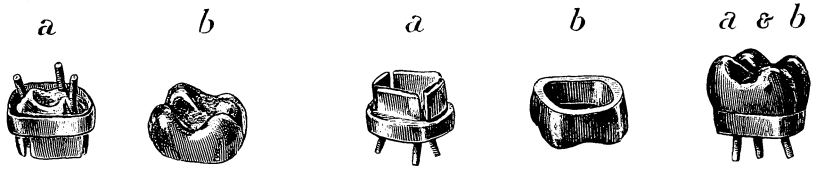


FIG. 3.

onizing tube is definitely determined to be one-sixteenth of an inch or more (Fig. 3 A). It is removed from the mouth, the root canals, pulp chamber and surrounding root area extending subgingivally are packed with baseplate gutta percha to keep the soft tissues away from the field of operation, and the patient is dismissed.

The measurement is obtained of the circumference of the vertical clasp metal band, and this is marked off upon a sheet of platinum, 38-gauge (Brown and Sharp), with a pair of compasses. The width of the platinum required is obtained by measuring the height of the vertical clasp metal band, and this is marked off upon the platinum plate; thus the proper length and width of a 38-gauge platinum collar, which is to fit the vertical clasp metal band, is obtained. This platinum collar or band is joined with a 25 per cent. platinum solder, the formula of which has been given. The joined collar is tried upon the vertical clasp metal band, and trimmed so that it conforms in general outline, and particularly in morsal line, to the height of the clasp metal band; it is removed from this band and converted into a flat platinum hood by the addition thereto of a 38-gauge piece of platinum, which is joined to the collar by the 20 per cent. platinum solder. The surplus, if any, is trimmed away, the hood is grasped with a pair of tweezers, heated slightly, and allowed to sink into a flat button of inlay wax of at least one-sixteenth of an inch greater circumference than the hood proper, and at the next

sitting the gutta percha packing is removed, the band as well as vertical clasp metal band-carrying inlay is forced into place; the wax-carrying platinum hood is put into position, and with a blast from the hot-air syringe the inlay wax is somewhat softened. The patient is asked to occlude and to triturate. Thus the highest morsal eminences are indicated, and, according to the geometric rules laid down in the previous article, the contour of the crown is restored, the wax crown is chilled and removed from the mouth. It is carved with the proper instruments and polished with a piece of linen dipped in alcohol. The wax crown is now mounted upon the sprue former, invested and cast (Fig. 3 B). It is chilled, finished off with the proper stones, discs, files, and will be found to engage the vertical clasp metal band perfectly, and the shoulder at its gingival surface will be found closely adapted to the shoulder upon the morsal surface of the staple and band-carrying inlay within the mouth. The entire appliance is now unseated and removed from the mouth. With a carborundum disc the vertical clasp metal collar is severed at four points, so that it will present four walls erected at right angles to the morsal surface of the staple and band-carrying inlay (Fig. 3 A). These four walls are spread somewhat, so that they will include a somewhat larger area morsally than they do gingivally; the morsal edges of the four walls are filed so that they will converge toward the center point upon the morsal surface of the band and staple-carrying inlay. Thus a spring of definite friction value is produced, whose action can be retained indefinitely by counter-sinking the cast crown at the morsal surface of its platinum hood to an extent equal in depth to the thickness of a 26-gauge (Brown and Sharp) clasp metal plate. The staple and band, as well as the clasp metal spring-carrying inlay with the female crown in position thereon, is now placed upon the root, which has been kept free from encroachment by the soft tissues. The patient is asked to occlude and to triturate, and thus the crown being found correct, the necessary steps are taken for the cementation of the male inlay into and around the root, or an impression is obtained with the appliances in position as the case may be (Fig. 3 A and B).

Variation.

In order to complete the subject of the telescope crown, it is best to take up a variation of the one described above, which, though seldom called for, has proven of such great value in extensive restorations, that ignoring it would be unjustifiable. It is shown in Fig. 4, and differs from the one described above in the fact only that it is composed of three sections, as follows: Fig. 4 A is the root section analagous to Fig. 3 A in previous crown; Fig. 4 B, the middle section, which fitted over the clasp spring attached to Fig. 4 A, also fits around the band portion of

Fig. 4 A, and finally Fig. 4 C, the crown portion which, engaging the clasp spring upon Fig. 4 A, adapts itself gingivally to the morsal plane of Fig. 4 B. It will be seen that Fig. 4 B carries a dovetail mesially, the purpose of which is to engage a bar extending to the next root, there interlocking with a similar dovetail carried upon the disto-proximal surface of a similar section of a crown.

The construction of Section B, Fig. 4, is simple, in that it requires merely the fitting of a collar around the collar of Section A, Fig. 4, after

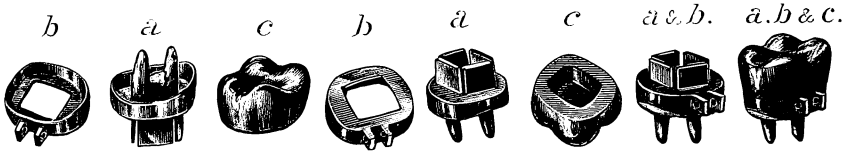


Fig. 4.

the latter has been completed. This collar should be 1/32 of an inch deeper morsally than the morsal plane of Section A, Fig. 4. The space of 1/32 of an inch is filled in with inlay wax, which is joined to the collar, fitted around completed Section A, Fig. 4, the inlay wax reaching up to the central clasp column. The whole is then chilled and the outer band, now carrying the wax, which extends to the clasp column, and fits over the morsal plane of Section A, Fig. 4, is allowed to become disengaged from A. The sprue former is attached to it, and it is invested and cast. The result is shown in Section B, Fig. 4, and A, B and C show the assembled crown. The root preparation is the same in both crowns described in this paper, and the same technique must, of course, be observed.

A Preliminary Study of the Influence of the Forces of Occlusion on the Development of the Bones of the Skull.

By Chas. A. Du Bois, D.D.S., New York City.
Assistant Professor of Orthodontia, Harvard Dental School.*

Read at the Annual Meeting of the American Society of Orthodontists at Denver, Col., July 13th, 1910.

Among the first voluntary co-ordinate muscular actions of a human being after coming into the world is that made with the muscles of mastication in taking food to sustain life. Long before the infant can hold up its head, or has gained control over those useful organs, the hands, the muscles of mastication are highly developed and are used with great vigor.

During the act of nursing, the action of this set of muscles is so vigorous that it demands an increased blood supply, to the extent that the heart's action is greatly increased; the excessive flow of blood to these parts is indicated by a reddening of the whole head, and the fontanelles themselves are caused to pulsate so that untrained observers comment on their movement. Later, with the advent of the dental equipment, this group of muscles is given more leverage, and its action becomes consequently more powerful; in fact, the force exerted on the bones of the head from the pull of these muscles during life is tremendous and amounts to many hundreds of thousands of tons of force. I have long been convinced that this great force on the skull, and the great flow of arterial blood to the head caused by this muscular activity, is a powerful influence

*From the Research Department of the Harvard University Dental School.
I wish to express thanks for the invaluable aid that Prof. W. B. Cannon has given me during these experiments, and for the use of the Physiological Laboratory of the Harvard Medical School.

in the development of the bones of the head and the important organs incased therein. It is the object of this paper to throw some light on this important but generally overlooked subject.

As the subject under discussion is so intimately connected with the action of the muscles of mastication, it will be well to consider first a few facts pertaining to the general action of this group of muscles.

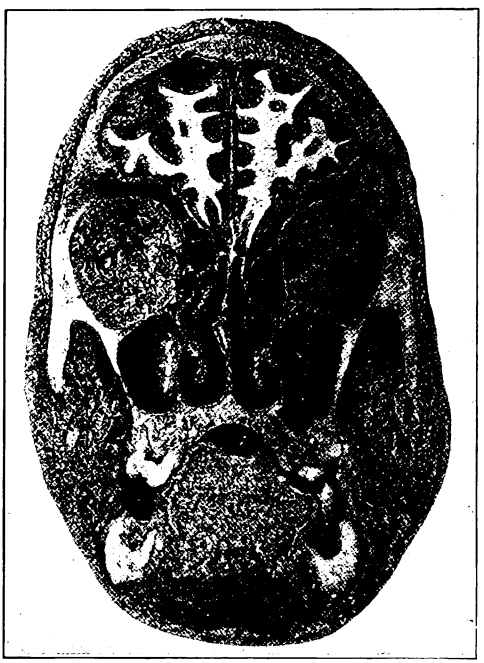


Fig. 1.

Fig. 1. (After Cryer.) Transverse section through the human head in the molar region. Note the size of the massiter muscles and the extent to which they pull on the outer walls of the antrums and on the floors of the orbits.

These muscles to a large extent surround the cranium, extending as they do from the temporal ridge on one side to the temporal ridge on the other side, and the internal muscles of mastication are attached surprisingly close to the base of the brain. All this is shown in illustrations 1, 2 and 3.

It will also be observed from these illustrations that these muscles are attached to the skull, and inserted into the lower jaw, at many different places and in many different ways; so that they pull in as many dif-

ferent directions, but it is a singular fact that, varied as are these muscles in shape, size, power and action, they have one common fulcrum, the dental equipment. The teeth may be truly termed the fulcrum of this group of muscles, because it is only when the teeth are brought together forcibly, or come in contact with food in mastication that the great power

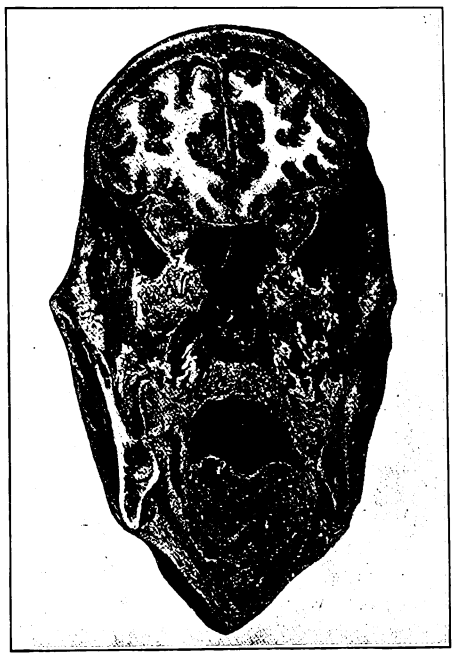


Fig. 2.

Fig. 2. (After Cryer.) Transverse section through the human head in the region of the ascending rami of the lower jaw. Note the extent to which the muscles of mastication pull on the outer walls of the nasal cavities and the close proximity of the attachment of the temporal muscles to the brain.

of these muscles is brought out. The truth of this statement can be tested by slowly bringing the teeth together. It will be noted that while the lower jaw is swinging freely, the muscular action is almost passive, but the instant the teeth are brought into action, the muscles on the sides of the head and face will be seen to knot out and contract with great vigor, and, of course, the hidden powerful internal muscles do the same.

The resultant forces of these muscles are in reality the forces of occlusion with which members of this society are so notably familiar. You well know that the forces of occlusion are based on definite laws, and

it was the early recognition of these laws by you, and your application of these laws to orthodontia, that has placed your society in such an eminent position.

The experiments on which this paper is based, and the experiments which I have at present under way, make me believe that the reaction of these occlusal forces on the skull are based on as definite laws as are the

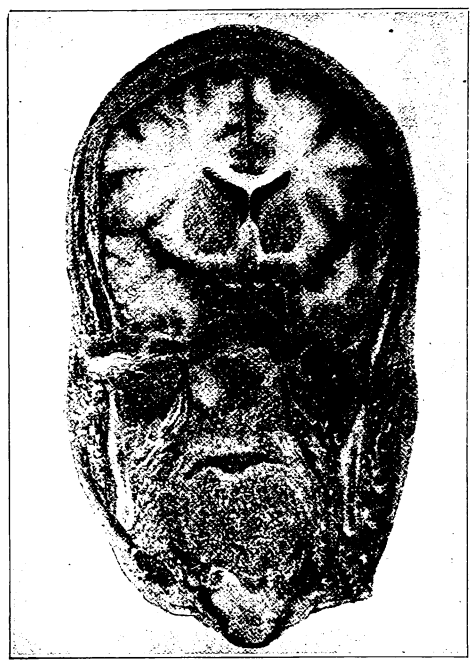


Fig. 3.

Fig. 3. (After Cryer.) Transverse section through the human head further back than in Fig. 2. Note—1st, that the muscles of mastication attach to the base of the brain-case; 2nd, compare the size of this muscular mass to the brain itself; 3rd, note the outward pull on the naso-pharynx of both the external and internal pterygoid muscles.

forces of occlusion themselves; furthermore, I believe that in these reactions are locked the secrets of a normal skull; for if a group of forces acts in accordance with laws, why should not the reactions of these forces be governed by just as definite laws as are the forces themselves?

Before leaving the first three illustrations there are several other matters worthy of consideration; for example, note the area of this muscular mass (including the tongue) as compared with the whole head. It will be observed that it ranks well in size with the other structures or

organs of this most compact, intricate and wonderful part of the human body. It is evident to me that nature never would have devoted so much important space to this group of muscles if it were not for the benefit of the head as a whole. According to the laws of evolution, the functional activity of such a mass of muscular tissue cannot but have a direct and powerful influence in shaping the bones to which they are attached.[1]

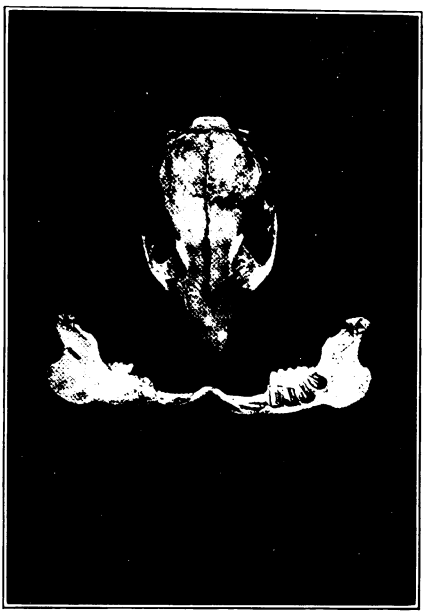


Fig. 4.

Fig. 4. Skull of a young rabbit showing the state of development at the beginning of the experiment.

Furthermore the great supply of pure blood that the vigorous activity of these muscles demands not only rushes to these muscles but also to other parts of the head, and it seems no more than logical to believe that the brain itself shares in this increased blood supply. The idea of muscular activity and increased circulation to the adjacent parts is a well-known fact. Dr. Campbell, in his remarkable series of papers,[2] laid great emphasis on this matter.

It occurred to me that if the hypothesis regarding the influence of

[1] See "Studies of the Internal Anatomy of Face," by Prof. M. H. Cryer.

[2] "Observations on Mastication," London *Lancet*, July 11, 1903, see paragraph, "The influence of the contraction of the masticatory muscles on the local circulation of blood and lymph."

the dental equipment on the formation of the bones of the head were correct, interference with the laws of occlusion in the lower animals would show consequent effects in the formation of the bones of the skull; and if variation occurred it might throw some light on the most complex problem of the development of the human head.

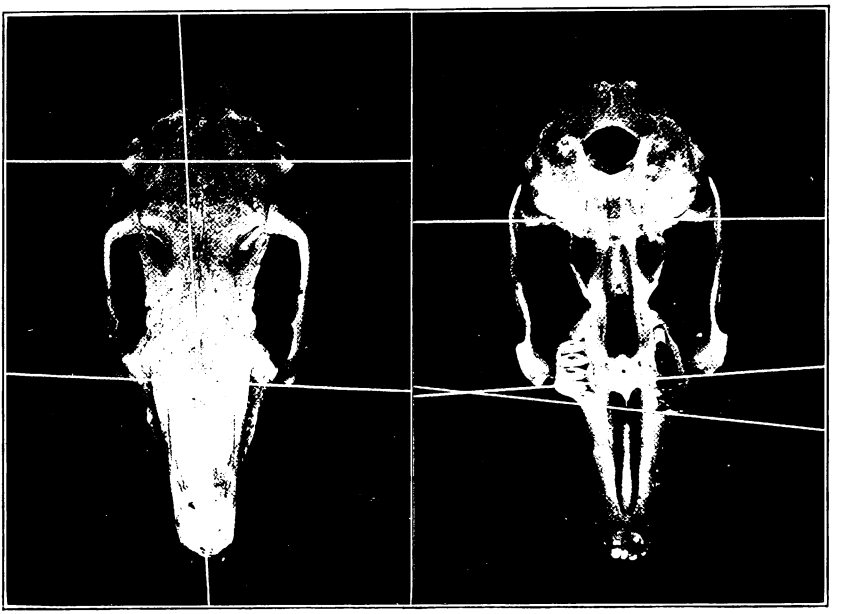


Fig. 5. Fig. 6.

Fig. 5. The upper aspect of a skull of an operated-on rabbit. Observe the unequal development of each lateral half of the skull.
Fig. 6. Lower aspect of Fig. 5.

Disuse of Teeth Affects Development.

To test this theory, the following experiment was performed: A litter of four rabbits was selected at the age of weaning. One of the rabbits was chloroformed, and the skull procured is shown in Fig. 4. Two of the remaining animals were operated on by grinding down all the teeth on the right side of the lower jaw and the superior right central incisor. As the teeth elongated, repeated grinding rendered them useless, so that all the mastication was performed on the left side. The fourth rabbit was kept in the normal state for the standard of comparison.

After seven months, the skeleton of one of the rabbits was procured and the skull was found to vary as is shown in Fig. 5, which is a photo-

graph of its upper aspect. It will be noted, by the drawn lines, that there is a deviation of the bones to the left.[3] The suture between the parietal and frontal bones does not run strictly at right angles to the longitudinal axis of the skull; the right frontal bone projects further forward than the left one. It will also be observed that the left zygomatic space is longer than, and more advanced than, the right space. The most noticeable deviation is in the nasal bones, both bones being twisted to the left.

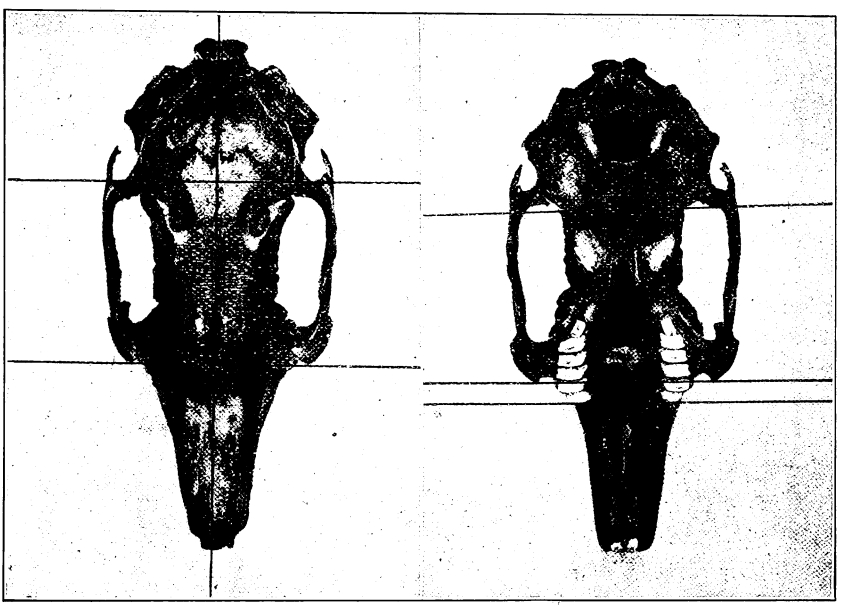


Fig. 7. Fig. 8.

Fig. 7. The upper aspect of the skull of a normal rabbit of the same litter. Observe the normal development of each lateral half of the skull.
Fig. 8. Lower aspect of Fig. 7.

On the lower aspect of the skull, Fig. 6, it will be seen that the deviation extends throughout the entire skull.[4] The most remarkable deviation is that the anterior root of the right zygomatic arch (the zygomatic process of the maxillary bone) is retreated while the body of the right maxillary bone itself with the teeth that it contains is greatly advanced.

[3] Right and left in this description refers to the right and left side of the animal. (The photographs are reduced in size.)

[4] Contrast figure 5 and 6 with 7 and 8, which are the same views of the skull of the control animal.

Figures 9 and 10 show that the lower jaw, as might be expected, is also distorted, even to the size of the articular processes of the condyles (see Fig. 9). The one on the left, or working side, is perceptibly larger than the right. (Compare with normal lower jaw, Fig. 11.)

Three weeks later, autopsies were performed upon the second altered rabbit and on the "control" animal. In dissecting out the muscles that

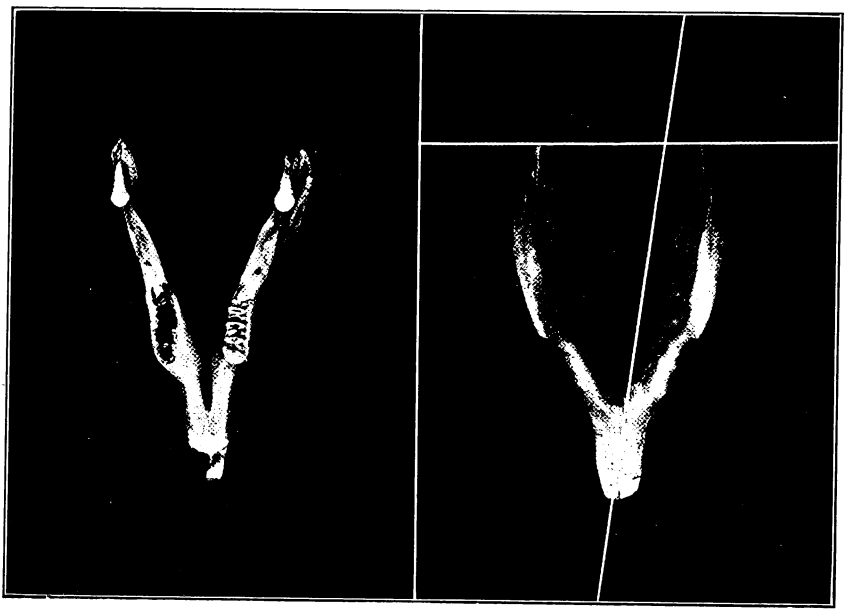


Fig. 9. Fig. 10.

Fig. 9. Lower jaw of operated-on rabbit. Note the lack of development of the condyle of the disused side.

Fig. 10. Lower aspect of Fig. 9.

control the movements of the lower jaw, I was struck with the unequal muscular development of each lateral half of the altered animal. On the unused side the muscles were noticeably atrophied and pale in color as compared with the working side. Later, the skulls were weighed and both the work-on skulls weighed much less than the normal skull, showing that the interference had affected the general osseous development of the head.[5]

Weight of animals		Weight of skulls	
Control	1631 grs.	Control animal	248 grs.
1st operated on	1478 "	1st operated on	227 "
2nd " "	1735 "	2nd " "	243 "

Figures 12 and 13 show the upper and lower aspects of the skull of the second altered rabbit. It will be noted that it varies in a similar way to the first one, but there is one particular that is worthy of note, and it is that the whole of the superior right aspect of the brain-case was flattened and with it occurred a corresponding lowering of that side of the skull (see Fig. 14).

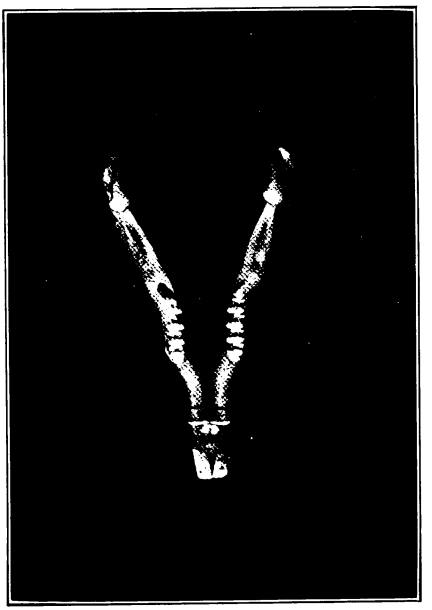


Fig. 11.

Fig. 11. Lower jaw of normal rabbit. Observe its perfect symmetry, and contrast with Fig. 9.

This variation in both cases was not confined to the bones of the head, for the bones of the thorax were also found to be distorted; the sternums were deviated, the ribs were twisted, and there was a spinal curvature in the dorsal region. In preparing the first skeleton, I had not expected to find this distortion except perhaps in the first and second ribs, so this distortion may have been due to the position of the animal during rigor mortis, but in the second animal these distortions were noted within one hour after death, and they did not occur in the normal animal. At present I cannot account for these variations in these thoracic bones, unless it was due to the correlation of growth.

The results of this experiment seem remarkable to me. Who would have thought that by interfering with the laws of occlusion the skulls

would have decreased in weight, and that every suture and every bone in the head would have varied as we have seen! This experiment strongly indicates how important is the masticatory equipment of man to the development of the head, and it also brings fresh illustration of the importance of the sadly neglected temporary dentition which serves during the important developmental period of childhood.

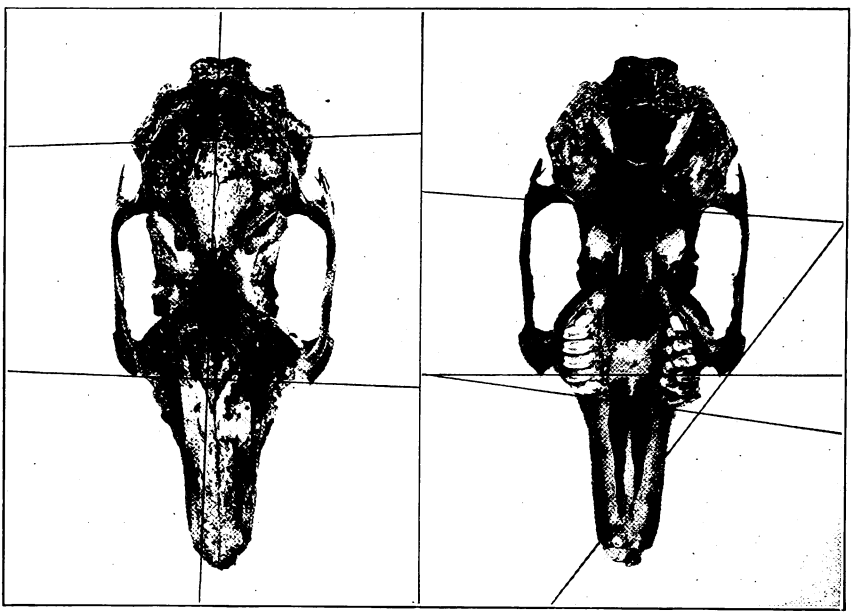


Fig. 12. Fig. 13.

Fig. 12. Upper aspect of the skull of another operated-on rabbit of the same litter. Compare with Fig. 5 and contrast with Fig. 7.

Fig. 13. Lower aspect of Fig. 12. Compare with Fig. 6 and contrast with Fig. 8.

Last year I endeavored to repeat these experiments and to continue the work on other classes of animals, but unfortunately my animals were attacked by a distemper, which so seriously interfered with my work that during the entire year I was able to make but one new observation worthy of note here.

Observations of Carnivorous Animals.

I found in working on carnivorous animals (cats) that the disuse of the muscles of mastication on one side materially interfered with the ossification of the bones of the skull on that side. As this seems to me a very important observation, I will state how I happened to note it.

I noticed in examining freshly prepared skulls of the animals operated on, that when the sides of the brain-case were pressed between the thumb and finger, the bone on the side where the function of the teeth was interfered with was so soft that it could readily be dented in, while the bone on the normal side was dense and unyielding. In the control

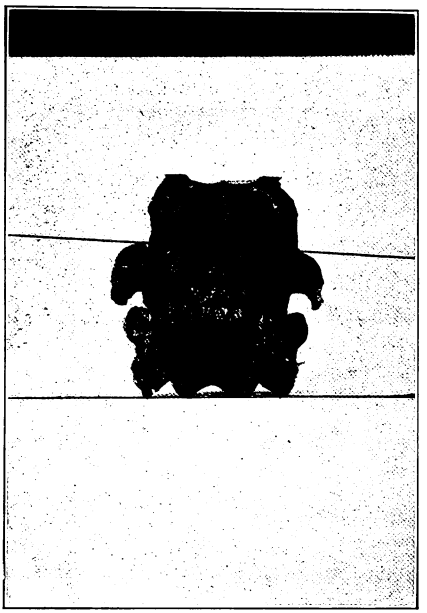


Fig. 14.

Fig. 14. Posterior aspect of the skull of an operated-on rabbit. Note the unequal development of each lateral half of the brain-case.

This photograph shows clearly the far-reaching influence of the use of the teeth in the development of the bones of the skull, for the most remote bones from the teeth have been perceptibly varied by interfering with their function.

animals, each side of the brain-case was found to be equally well developed and, in fact, it was impossible for this finger pressure to cause any denting of the bones.

The statement that the shape of the skull in the lower animals can be modified, and the strength of the sides of the brain-case can be varied, by simply interfering with the function of the teeth, seems almost incredible. The truth of this statement can be better understood when we study further into the great power of the masticatory muscular system.

In the human being, the force required to thoroughly masticate a lean

corned-beef sandwich was estimated to amount to about three tons. Who would believe that 7,050 pounds of pressure were exerted on the bones of the skull through the medium of the teeth in masticating this simple article of food!

These figures were derived from the following test: A man with 32 teeth, in good condition, was selected for the test subject. The test food consisted of an ordinary lean corned-beef sandwich, 2½ inches by 3½ inches. This was masticated until it was involuntarily swallowed. The number of mouthfuls, and the number of chews per mouthful, and the time consumed, were all carefully noted. The force with which the teeth were brought together was estimated to be 10 pounds for each contraction of the muscles of mastication, which is a very conservative estimate.[6] The time consumed in leisurely eating the test food was about nine minutes, and, as has been stated, the estimated force was 7,050 pounds. A second person in making a similar test required 52 contractions less than the former, but the meat was much more tender than in the first case.

If these deductions are at all accurate, the force exerted on the skull through the medium of the teeth over a period of time can be easily calculated, and will be found to be enormous. Thus we readily see how interfering with one side of the dental equipment in an animal can affect the shape and structure of the skull, for according to the laws of evolution, we know that the continuous muscular force exerted on a given bone determines the shape of that bone.

The argument might be raised that the conditions in man and in the lower animals are not at all alike, and no true analogy can be drawn. It is very true that the dentition in man and in the lower animals differs, and it is also true that the dentition in the various classes of animals differs one from another, but in both man and in the lower animals the muscles which control the motion of the lower jaw correspond so closely that every muscle and every bony process is strikingly similar, even to

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[6] The amount of force required to crush food has been very carefully studied by two investigators, Dr. G. V. Black and Dr. Joseph Head. Dr. Black confines his work to the *direct* force required to crush food (see *Dental Cosmos*, 1895, Vol. XXXVII, pp. 478-484), while Dr. Head directed his investigation towards the *trituration* of food (see *Dental Cosmos*, 1906, Vol. XLVIII, pp. 1189-1192). Both of these experiments were more to determine the crushing point of food than the amount of force required to masticate food; so to estimate the force required to masticate a given article of food the number of closures of the jaws must be considered.

The following table shows the comparative results of these two investigations in crushing meat. It will be noted that the trituration gives a lower crushing force, with one exception, than the direct pressure:

	Dr. Head lbs.	Dr. Black lbs.
Corned beef	18-22	30-35
Tenderloin of beefsteak, very tender	8-9	35-40
Round of beefsteak, tough	38-42	60-80
Roast beef	20-35	35-50
Boiled ham	10-14	40-60
Pork chops	25-30	20-25
Roast veal	16	35-40

the hamular processes of the sphenoid bone. So if interfering with the laws of occlusion in the lower animals will cause every bone in the skull to vary and cause a decrease in the weight of this bony structure, and even cause a change in the strength of the brain-case, these experiments will certainly shed new light on the importance of the human dental equipment.

In conclusion, I wish to make it clear that this is but a preliminary consideration of this subject, and I venture to bring my findings before you simply because they so strongly indicate the far-reaching importance of orthodontic work. Later, I hope to present for your consideration future work along this line of investigation. Finally, I wish to add that the writings of E. A. Bogue have been an important factor in influencing me to undertake this line of experimentation.

Discussion of Dr. Baker's Paper.

Dr. G. M. Wright. My paper to-morrow will deal with the effect of such deformities as Dr. Baker's investigation would prove occur in malformed sinuses and malformed brain cavities, and it is so nearly in the line of Dr. Baker's paper that I am afraid I will lose my thunder by talking on the subject this afternoon instead of waiting until to-morrow morning. This paper has been very interesting to me, and is a true addition to our knowledge of the development of these parts. As to whether the muscles of the outside of the face, which are so powerful and so much used, have to do with the development of the sinuses, particularly those accessory to the nose, that would present itself to me, from Dr. Baker's reasoning, as a debatable point. On the slides shown it looked to me as though perhaps the influence of nasal respiration, the air pressure, etc., would have as much to do in crowding out those spaces as the muscles on the outside have in contracting and bringing them in. Referring to the last slide by Dr. Cryer, the septum deviates markedly toward the left, and the ethmoidal cells on the left are large as compared to those on the right. The frontal sinuses are usually unequally developed, and in this case they are greater on the right than on the left. In an examination of perhaps three hundred and seventy-five normal individuals of the Caucasian race, two hundred and forty had deflected septums. Some say this is due to the height of the arch, and I think that may be true. The eminent anatomist, Cunningham, says his researches prove that all of the frontal sinuses have been developed larger in the adult on the side from

which the septum has been turned. This last illustration of Dr. Baker's is one of the most beautiful one could have. It would be interesting if we could note the effect on brain development. The cranial capacity has been probably interfered with, and I wonder if Dr. Baker made any comparative measurements of a rabbit at that same age, as that of the rabbit that was not normal.

Dr. Baker. I did not make a measurement in the sense of a measurement, but I did in weight. I filled those skulls with fine bird shot, and then I poured the shot out and weighed the skull contents. One of the rabbits operated on showed a brain capacity much less than the control animal; and in the other the weight was the same, but there is a question of sex that enters in here, and I do not dare to make a definite deduction. I want to prove that interfering with the occlusion in this way does cause a variation in the development of the brain capacity. This is a preliminary experiment only.

Dr. Wright. A study of craniology shows a great difference in the capacity of different skulls, particularly those of the Aborigines. The Icelander has a skull of about the same capacity as our own, although he is not of an educated race. In the Aborigines we find but few deviated septums. When we do find them they are usually the result of traumatism. In one hundred skulls of Indians in Wisconsin, which were in my possession at one time, I found no instance of a deviated septum, nor of a high dental arch, except such as came from traumatism. In specimens I have noted in London, Berlin and Vienna, it is shown that the Aboriginal races are not heir to such malformations, malocclusions, deviated septums, etc., as is the Caucasian race. In working two years ago last winter with Hurst, the first assistant of Dr. Hyatt, we wished to get an answer from different men of large experience as to this matter. We wrote to eminent rhinologists, etc., asking, "Do you find that the negro, after one or two generations of habitation in the unhygienic surroundings of your city, has developed the same number of malformed septums and high dental arches as the white child?" and invariably the answer came that they did not. The negro, with near relation to the Aborigines, has not been grinding and cooking his food too well, and saving himself too much labor in the preparation of his food as we have; he has not slept in the overheated bed chambers, and subjugated the nasal mucous membrane to a variation of 80 or 90 degrees as he goes out in the morning, and he has developed his breathing capacity by doing his errands on his own legs instead of using the street-car, and consequently he does not have need for the orthodontist as the whites have.

Dr. E. A. Bogue.

It seems to me that all the way along we have been putting our cart before the horse. Don't you think, Dr. Wright, that the pictures which Dr. Cryer exhibits of malformed, or misplaced, antra, show a failure in the performance of function on the side where the diminution exists? And then don't you think that in the light of recent developments, the "Baker developments," if you please, that where we noted phenomena that we have all seen in the faces of our patients, and noted on our records, not knowing just what to attribute them to, may we not hereafter attribute them with much more accuracy to the failure of the performance of function further back, in the process of development?

Referring again to Dr. Baker's rabbits, showing the tempero-maxillary articulation on the right side, there is no doubt that they failed to develop on that side. In those specimens, the failure of development is marked: it is not a fancy, and lest it be looked on as a fancy Dr. Baker has drawn mathematical lines, and you cannot question them.

There has been a great deal written on these subjects, but most of it has not been demonstrated: we cannot reach any point where we can say we have proven anything, but there is a lot of accumulated evidence, going to show that Dr. Wright was correct five minutes ago when speaking of the negro and malformed septa. It has been pretty well demonstrated that the development of bone is promoted by the exercise of the function of the muscles attached to those bones. When the Scotch fisherman at eighty has good teeth, and his daughter wears artificial ones, there is a reason; and when the same thing is true in Sweden and Norway and partially true in other countries, we begin to think of the reason again, and whenever I try to follow the matter up at all (and Dr. Baker has spurred me on), I find that invariably where these people have lost their teeth comparatively early in life, they have failed in childhood to masticate hard food. A gentleman with whom I crossed the water a few years ago, Dr. Shannon of Seattle, was one of eight children, who from the mother's breast were immediately set at the table and allowed to take crusts, and bite on large pieces of meat, and gnaw chop bones, and he said that not one of the eight had any difficulty with the eustachian tubes, the eyes, nose or dental arches, and that for twenty years not one of his family had ever required the services of the dentist, and he himself not until thirty, and then to lance the gum over a wisdom tooth. He said the same thing was probably true of all those of whom he had any knowledge in the village where he lived. All of this is cumulative evidence.

Dr. Grenfel, the Labrador Medical Missionary, told me personally that something more than fifty per cent. of his Labradorians are now

affected with adenoids, which perhaps is a step in advance in the knowledge of that locality.

Dr. Wright. At the State Capitol we have between sixty and seventy skulls of cliff dwellers, and you gentlemen might find them interesting to study and note the development of the dental arches of those who are probably as nearly Aborigines as any specimens we have in America. They may be seen in the basement of the Capitol at any time you go up there. The keeper in charge will give you full right to look them over.

Dr. W. J. Brady. Mr. President and Gentlemen: I realize, as you must do, that when we begin to discuss subjects of this kind we are getting into pretty deep water. However, if we all hesitated to go in deep water, none of us would ever learn to swim. Everything we are able to add to the general stock of knowledge counts for something, though it may be about something on which our knowledge will never be complete.

We realize that no one man can compass all we may wish to know of a subject, hence the value of two discussions pertaining to the same thing. I have been much interested in the pictures and remarks of Dr. Baker, and the excellent and scholarly paper of Dr. Wright, not only because of the intrinsic value of each, but also because they are along the line of certain investigations I have made myself—very limited compared to what I wish they were—and all bearing upon the same question, *i.e.,* what controls or influences the growth of the bones of the face and skull.

We know these bones do not always grow alike; there can be no question on that point. We have all seen and wondered over wide departures from the usual form. In searching for the causes of these variations, there are many different things to consider. It is with considerable pride that I note we have got away from many of the old ideas prevailing about deformities of bones of the face; from the old belief of heredity of such things; from the old supposition that sucking the thumb is the cause of so much malocclusion, and many other things equally unproven by observation and reasoning.

It is the belief of some that adenoids are responsible for almost everything in the way of non-development of the face, but adenoids alone is not a satisfactory explanation. We must go deeper than that; to understand development and non-development, we must consider the normal performance of function—the normal use to which a part or organ is put. The exhibition by Dr. Baker shows the effects of normal use most decidedly. If we study deeply into bad malformations connected with adenoids, we will find that the adenoid enlargement proper

is only one of the contributing causes to the general condition. The use which nature intended, producing the stimulation necessary for growth, has not been given.

It is intended by nature that air shall be taken freely through the nasal opening, and that this air should be warmed and moistened thereby. This calls for a constant blood and lymph supply to the lining of the upper respiratory tract, and then follows a constant reaction upon those tissues by their performance of this their natural function. The presence of adenoids interferes with nasal respiration, and the function of numerous tissues is but scantily performed—again disuse, with consequent lack of development.

Nasal respiration normally produces ventilation of all the connected sinuses, and lack of this ventilation has a considerable effect upon development, especially as the only function of these various cells and sinuses is to contain air, so far as we know. When the air contents are not normally swirling in and out with every breath, they fail to develop, just as the lungs fail to grow when not given full use.

The bones of the skull develop after laws of their own. The brain development and skull development always coincide. So far as we know, no outside influences affect the skull development, unless its growth is accidentally or intentionally changed, as, for instance, the compression between boards by certain tribes of Indians for purposes of beauty—that is, beauty according to their standards. But the bones of the face are different. They are simply plastered on the skull, and use or disuse is one of the most potent factors in developing them.

Of course, our friend Talbot does not agree with this, and explains every lack of development from the standpoint of degeneracy. Whether there is anything in the brain and nervous system that dominates the development of the bones of the face is entirely beyond me to say. I have asked many neurologists that question, and they have all avoided a direct reply. When connected with the State University of Iowa I inquired of several biologists as to the exact control the nervous system exercises over the development of the various organs, and to my surprise they told me it has little or no influence until the body of any animal is well formed; that the nervous system is very incompletely developed until the body and organs are well modeled, and that it is a very debatable question whether the nervous system ever governs development beyond influencing tissue nutrition through the trophic fibers. That rather demolishes the theory that abnormal brain development controls, or is responsible for, unusual or abnormal bones of the face.

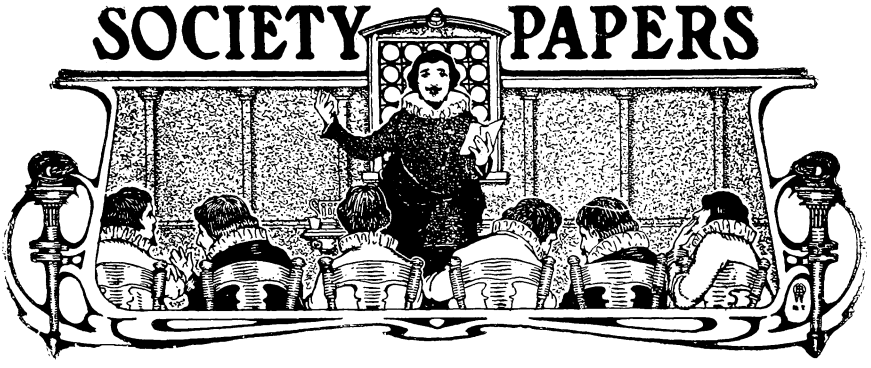
I am sorry I cannot discuss a matter of this importance more in-

telligently. Some time I hope to bring something along this same line before this Society, and show the growth of the face by a series of moving pictures. Possibly I am too ambitious in aspiring to this, but I shall never be really happy until the growth of the face is actually shown on the screen before us.

Dr. Federspiel. Dr. Brady suggested that the brain may have something to do with the development of the jaws, face, and skull. I wish to add that if we had a scientific knowledge of the glands and their functions it would be beneficial. We know that the glands play an important part in the development of the body, physically and mentally.

Dr. Baker. I would like to ask the last speaker if he has read the work of Geo. H. Wright, of Boston, on the Tonsil and Its Relation to the Teeth? It is a very fine article.

Dr. Bogue's work has been one of the factors stimulating me to undertake this investigation. He told us all things ten or twelve years ago that we did not believe at the time. I did not believe that normal occlusion was necessary to the normal development of the skull: I said Dr. Bogue was a "faddist!" He is right. You must have normal occlusion to have the normal muscular pull, and you must have the fulcrum normal. Of course, you must realize from what I have said that I am a great believer in Darwin's work. I am just beginning this study. There are many problems to solve, and when I get to be sixty or seventy years old, if I work until then, I may say something more definite than to-day.



Public School Clinics.

By Herman E. S. Chayes, D.D.S., New York.

Read before the Central Dental Association of Northern New Jersey, Nov., 1910.

If we scan the pages of the world's history back to the period of the middle ages, and farther back from here until the last leaf has been turned and disclosed the entire tale of human progress, from the stone age down to this the present, the period of aerial navigation, we will be forced to mentally wade through the rivers of human blood in which were washed off the sins and transgressions and shortcomings of the various nations. Here and there will rise the mighty name of some intellectual giant planning and executing an attack, as the result of which whole nations disappear.

They were the days when all the cherished gifts were reserved for the successful warrior. The Gods blessed him, the public worshipped him and women loved him; to him the poet sang, and of him the scribes wrote. They were the days when the devastation and desolation of one country was celebrated as a great boon by another; when the anguished, heart-rending, piercing shrieks of a perishing people awakened naught but added cruelty within the breast of the conqueror. And so things went on in the world; nations came and went, were born and were destroyed, and all the time nature saw to it that the coming one was a trifle less bloodthirsty than the one it replaced.

March down the wide road of ancient history, and the history of the middle ages down to modern times, and note the ever-increasing length of the period free from gorefests and cruel warfare, and with that note the growth of culture, the development of the mind in the direction of

peaceful pursuit of happiness; until we come to the beginning of the present era, the commercial era in the evolution of mankind, to find that the methods of the warriors of old are crude and now uncalled for; furthermore, they have become inefficient, because the number of the nations and the vast number of the peoples have become unwieldy for the hand-to-hand combat of the middle ages and for the puerile-looking battering rams; and forthwith the great intellects of this world, those who in the days gone by planned the mighty wars of old, Leonidus, Themistocles, Darius, Xerxes and Hannibal, the giants who led the great hosts of crusaders, all sink into insignificance beside the exploits of a Napoleon and a Washington, a Moltke and a Sheridan.

The conflict between this country and Spain, and the bloody one-sided war between the Russian Bear and the tricky weasel of the East, mark perhaps the closing of a system of warfare which for so long has engaged the brains and intellect and inventive ability of the great minds of various nations.

Hand in hand with the declining of the period of conquest by sword or gunpowder has come the commercial development of the various nations and the exploitation of the numerous natural resources of the various lands.

A great composer might attempt the setting to music of the entire history of the world; he could almost create a perfect symphony were it not for the strident note of unhappiness here, there and everywhere that seems to rise piercingly from the conquered hosts of humanity and strike a discord impossible to overcome.

The Commercial World War.

We have done with the war of the sword and the battleship is the guardian of peace, but we have entered into a period of wars of another kind, far more vast, far more relentless and far better planned. The whole world of to-day is a huge chess board, with the various captains of all the gigantic commercial enterprises as kings and queens. They have the greatest armies in the memory of man at their disposal, the wage-earners of all lands. The markets of the world are the prizes they are fighting for. Their weapons are the accumulated wealth, and the means the machinery of production. What does it matter if millions of lives are lost through lack of care, through starvation, through disease, so long as the Giant's mind remain intact and adds to his ever-growing hoard, and hence ever-growing army? The fewer these mental colossi in control of the commerce of the world the greater the dependence of the vast working armies upon them, and the more absolute the sway of the commercial kings. Just how far this can go before the final readjustment of things takes place is impossible to say at present. It has,

however, become evident of late that these great commercial intellects have begun to realize that even the conquest of the markets of the entire world by one nation would not in any measure substantially increase their intrinsic worth to themselves and their fellows, and hence a brighter day is dawning, a day of hope for the vast armies who toil and labor and strive and create; a day of more equitable distribution of all the good there is to be obtained, of all the comforts to be had; let us all do our best to speed this day and bring it nearer.

And so this is written in the hope that it will prove a bugle call, a clear, penetrating, far-reaching, purposeful bugle call, reverberating through space in an ever-increasing circle, seeking an instrument properly attuned to receive it. It is hoped, too, that it will finally strike a responsive chord within the breast of those most fit to agitate its purpose and best gifted to accomplish the desired end.

It is meant for the Frederick Haskinses, the Charles Edward Russels, the Stokeses and the Robert Hunters and the Jack Londons; it is meant for the Upton Sinclairs and the David Graham Phillipses; it is meant for all writers who are clean, who are pithy, who are truthful and sincere, who are unselfish in their devotion to their one great task, the uplifting of mankind.

This bugle call is meant for them and they must hear it and heed it. They have worked long and often without hope of personal reward in behalf of the great task, and they will allow their great and telling efforts to be enlisted again, if it can be brought home to them in a striking manner that they are wanted, needed and must be had without a doubt.

It is meant, too, for another class, this bugle call, and it rests with you if it is to rise shrilly and persistently upon the air waves of their indifference (if indifferent they prove) until they hear and heed it.

It is meant for the men who stand at the head of things; of institutions financial and industrial. It is meant for the Morgans, the Stillmans, the Hills and the Harrimans, the Rockefellers and the Carnegies, the Ogdens, the Armours and the Millses. It is meant for all those who have grown immensely wealthy in this land of sunshine and sorrow, in this camp of life and death, in this country of opportunity, of glaring iniquity; in short, in this paradox of republics.

An Appeal to the Very Rich.

These men all have their pet protégés, their educational enterprises, all worthy and desirable; they all have their pet charities to which they contribute most generously, and in some way or other they have managed, after indirectly impoverishing the great masses in their accumulation of enormous wealth, to work in a manner for the advancement of the generation they live in. All deserve

at times condemnation, so freely applied; but, too, all of them deserve much credit, often too tardily granted.

This bugle call is meant for them because it means to call their attention to a fact which they have overlooked, a sphere where, all things being equal, their millions would have accomplished the greatest amount of good.

While it may seem peculiar that men of such tremendous financial and mental resources should have overlooked so absolutely, an opportunity so vastly promising in possible results, and at the same time so easily embraced, it is probably due to a desire within each man spending money for charitable or human developmental purposes to see immediate results, even though they be temporary and of no great consequence, when the lasting benefit to the race or generation is considered. Perhaps, too, it is the fault of the members of a profession, hostile to a condition of pure idealism in its midst. It may be that, actuated by selfish motives and desires, they have in the past purposely and carefully avoided the hewing of a path which would lead our influential men to a recognition of a crying need for their help in the direction to be indicated. An attitude such as this is, of course, to be strongly condemned, and were it the sole reason for the virginity of this field, so vast in possibilities; were only the profession responsible for the one great hygienic void, the blame is entirely removed from the doorsteps of our philanthropist and placed upon the shoulders of professional men who have been unable to rise out of the vat of utter selfishness to the enviable height of devotion to a worthy cause regardless of personal reward of any kind.

Be that as it may, be the blame ours or theirs, it is to be hoped that they who read will know, and knowing that they will act, and acting that they will aid what the writer considers a great work, an important work, a vital work of grave moment and deep interest to the generation growing up among us and those to follow.

Money Wasted on Missionary Work.

What millions have been spent in the various missions among the heathens of the eastern lands! How many heroic lives have been sacrificed upon the altar of religious fanaticism?

To how much greater advantage could these streams of wealth have been spent in the hygienic instruction and correction of the physical disabilities of our young and old at home?

We spend millions trying to make people understand that tuberculosis can be averted and cured, and we tolerate industrial conditions which compel them to continue in squalor and filth and potential insufficiency, which not only tends to lessen their resistance to tubercular inva-

sion, but actually invites the ravages of the plague into their degenerated tissues. Economically and industrially speaking, we have enslaved the producing class. Hygienically, our school children, at least the vast majority of them, are the poorest looked after of any in the civilized nations.

Hygienically, our poor are the worst examples of ignorance (all things considered) to be found. Filth, squalor, decay and disintegration about and within; they are walking incubators of disease germs, and their respiratory apparati are Gatling guns loaded with myriads upon myriads of malignant bacteria, discharged with every expiration into the surrounding atmosphere, contaminating the air which they must again inspire.

What motives actuate the men who write and the men who give? The sincerity of the first is usually unquestioned, and the motives or the purity of the motives of the latter do not concern us; it is not for us to decide whether their motives be pure charity or benevolence, or a desire to return in a measure a part of the wealth they have taken for their wage; whether it be a desire to have their name perpetuated as one of the names of a period to be everlastingly remembered for their philanthropic tendencies, or if it be fame they are seeking, or glory.

Let us take up a few and see how they have succeeded in their endeavors, and what good has been accomplished in proportion to the money expended; and if that be not the main object, then how much good has been accomplished incidentally to their acquisition of a niche in the Hall of Fame.

Rockefeller, who has probably given most wisely, has spent untold millions in fostering his educational pet institutions, and the Rockefeller Institute is an everlasting monument to that Captain of Gold and Man, and commercial acumen.

When you feel in an outburst of civic righteousness that Rockefeller as the head of the Standard Oil should be crucified in a public square, allow your mind to reflect that the millions he earned, wrung from an independent dealer, or stolen, if you like, made the discoveries of a Simon Flexner possible. If the millions he gave or returned for educational purposes are but a minute portion of what he took from the commonwealth, please remember that men of his kind are exceedingly rare and their work must be adequately paid for.

As a type he is worth having, no matter what the price, and in the distribution of part of his enormous wealth he has shown a wisdom rarely equaled by any other one of our philanthropists.

Carnegie and his libraries and hero funds is quite another phase of philanthropic developments, and while his library endeavors are a commendable undertaking, the good he will accomplish is of the surface kind, and as far as building a monument for the gratification of his vanity is

concerned, one good fire will obliterate any one of his efforts in that direction.

The millions he has spent, no matter what his motives, have been poorly spent, because they could have been used to greater advantage. His genius in the line of giving money for public weal is to the genius of Rockefeller as the tallow dip to the arc light.

Nothing can be gained by criticising the manner, purpose or reason of gifts; neither are we qualified to analyze the motives of the givers, as regards their purity; the fact that they have spent freely and generously in various directions is enough to confer upon them the title of useful and valuable citizens of a community which in a great many instances has proven anything but grateful.

But it can do no harm to call to the attention of those able to give, a field of usefulness for their millions, hitherto absolutely neglected, and if we are able to convince them of the importance of the proposed innovations as advocated, to the extent of enlisting their financial and moral support, a great work will have been accomplished, and they will have erected for themselves a monument so lasting and so colossal in magnitude, so superb in its grandeur of pure idealism and genuine worth to the human race that it will surpass any other one credible acknowledged effort of any philanthropist known to history.

Cleanliness.

When you say that cleanliness is next to godliness you do not mean to convey the impression that cleanliness implies just a clean exterior, a sort of hand sapolio session with the skin of the body, hands and face; your intention is surely to include a clean, wholesome interior of the human body, a clean digestive tract, clean kidneys, and primarily a clean mouth containing clean and perfect teeth. This being the case, the vast majority of our school children are hopelessly ungodly, because they are hopelessly unclean as far as their internals are concerned. Why look aside from the issue and pretend to lessen its importance by disposing of it with a shrug of the shoulder or a gesture of contempt? The issue is there in a great, glaring, grewsome presence, and its importance is greater than vaccination, or the care of the eyes or the nose and the throat; greater than any one of the single cares taken upon itself by the municipality, because of the wide beneficial influence the proper care of the mouth and its contents would exert upon the physical well-being and mental fitness of the little citizens.

Economic Statistics.

No nation is stronger than its growing generation, no nation is better than its growing generation; And so the physical and mental life and future of ours are dependent upon a generation a great part of

which is growing up in filth and squalor and disease and decay, and often in an environment which is conducive to moral leprosy and mental death.

You may extend your congratulations to us upon our future.

Let me give you a glimpse of our economic and industrial, as well as financial, conditions

The wealth of the United States amounts to	$120,104,211,917.00
The per capita wealth amounts to	1,311.11
The per capita circulation amounts to	36.00
The value of the farm lands of the country is	25,514,001,838.00
The number of farmers	5,739,657
The value of the farm products in 1907 reached	7,412,000,000.00
Farm laborers received a maximum total of	1,000,000,000.00

The capital employed in the various industrial enterprises in the United States:

In 216,262 establishments	$12,686,265,673.00
The value of raw materials	8,503,949,757.00
The value of the product as manufactured was	14,802,147,087.00
The gross profits, which amount to over ...	6,000,000,000.00
Are divided as follows:	
Wage earners, 5,470,321 in number, receive in wages	2,611,540,532.00
Officials, clerks, salesmen, etc:	519,751
men and women, receive	574,761,231.00

Thus it will be seen that the capital employed earns an interest of about 25 per cent. per annum. That the wage earner receives as his share only about 15 per cent. of the gross value of the product.

The capital employed in the various enterprises in the State of New York amounts to....	$2,131,459,515.00
The value of the product in total is.....	2,488,345,579.00
The number of wage earners in New York State is	856,947

The amount paid to them reaches a total of.. 430,014,851.00 which in round figures means that the skilled mechanic of New York State receives an average of $500 per year.

The amount of capital invested in the various industrial enterprises of the State of New Jersey reaches a total of.....	$715,060,174.00
The value of the manufactured products is...	774,369,025.00
The number of wage earners is.....	266,336.00

And they receive as wages the sum of..... 128,168,801.00
Or an average of ..... 500.00 pr.yr.
There are in the United States a total of 81,764 paupers,
of which 52,444 are men
and 29,320 are women.

Thus it will be seen that of the total population of the country there are about 13,000,000 men who receive as pay a total of about $3,000,000,000.

There are in New York State a total of 1,634,523 families, and New Jersey boasts of 415,222 families.

The numerical strength of these families is about five members to each one; that is, the two parents and three children, or an average of $100 per year for maintenance of each being, including the housing, clothing and feeding, as well as educating the members. And please remember that out of this sum must also come any amount required for medical attentions or dental work.

Let us proceed to the school question.

The total population of the United States in 1909 was.88,252,446
The number of children between the ages of 4 and 14
in the United States reaches a total of..... 20,000,000
The number of children enrolled in the public schools
(grammar and primary) in 1908.....16,291,506
The population of the State of New York in 1905.... 8,066,672
Children of school age in the State of New York.. 2,146,764
Children enrolled in New York State public schools.. 1,364,639
Number of public schools in New York City..... 590
Number of children enrolled in New York City.... 700,000

Or an approximate average of 1,186 children to each public school in New York City.

The population of the State of New Jersey was in 1905 2,144,134
The number of children of school age in New Jersey is 572,923
Children enrolled in the public schools of New Jersey 402,866

The rest of the children in New York and New Jersey are no doubt taken care of in private schools or are being tutored at home, with the exception of the 175,000 illiterates present in both States.

It would require reams of paper to prepare exhaustive statistics of conditions as they exist in our public schools, to say nothing of the gigantic task it would prove to be, once started; yet this fact cannot possibly excuse our inaction in the matter, and is but a condemnatory finger of just derision pointed everlastingly at our unpardonable indifference toward this important phase in the development of our children.

The present status of our exceedingly complicated commercial civ-

ilization and the consequent economic conditions make a reasonably desirable change in the condition of the masses impossible at present.

A great deal is being done to ameliorate their hard lot, it is true, and education will in time bring them into their own, if they survive.

The School Clinic.

And it is for the purpose of helping them to survive that it has become necessary and of vital importance to instruct the growing generation in the proper care of the mouth and teeth, to the extent that they be compelled to have or seek dental attention whenever required, the requirement to be disclosed at a bimonthly examination by competent authorities; at institutions called into being for this specific purpose, and where the work would be done at a most reasonable charge or absolutely free of charge to the patient or his parent.

How are we to bring such institutions into life?

There are 590 public schools in New York City, and the number of pupils is about 1,186 at each school. I am not aware of the exact number of public schools in the city of Jersey City, but I assume there are about 100 to 120, with an attendance of about 100,000 children.

The establishment of a public school dental clinic system in conjunction with every school in New York City and Jersey City could be accomplished at an initial expenditure of $1,000,000. The expense of operating these clinics in both cities would mean a maximum of $6,000,000 a year, as follows:

A skilled operator at a salary of.....	$3,000.00	a year
A nurse at a salary of	900.00	"
A clerk at a salary of	1,200.00	"
Which makes a total in salaries of	$5,100.00	"

The expense of materials and incidentals would bring the running expense of each clinic in conjunction with each school up to $7,000 per year, which makes a total of 4,900,000 for the entire system, leaving a surplus of $1,100,000 to be expended for research work and salary for supervising boards.

There is no sound reason why, to a large extent, this expense could not be decreased by the clinics becoming self-supporting, and I dare say that proper management would carry the project to a successful completion on an expenditure of about $3,500,000 per annum, which latter figure is the income on $75,000,000, about the amount expended in christianizing our heathen brethren.

Let there be created by Rockefeller, Carnegie, Mills, the Armours, etc., a Board similar to the Carnegie foundation.

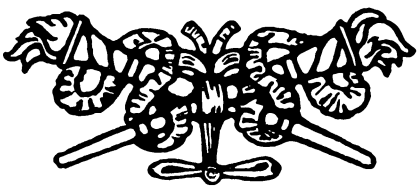
Let every State have one man to whom every operator in a public school dental clinic shall make his report.

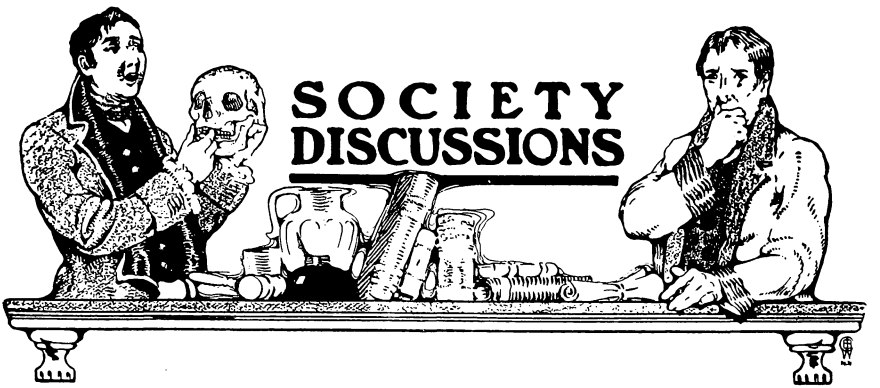
Let every State send this one man as a delegate member to the Central Board meeting, where the wants of the various clinics and their work shall be discussed. A special Board shall be appointed by the Central Board in order to examine candidates for the position of operator, and those having had a medical education should be given the preference. A representative of the Board shall make an examination of work done at the clinics no less frequently than once a month, in order to ascertain the standard of the work being done.

The patient shall have a record sheet upon which a series of questions shall be printed, and which shall be filled in by the clerk.

I believe that I have outlined the nucleus of a possible organization which, with the help of the large number of wealthy men, can be brought into life without much trouble, and which will at one stroke decapitate the hydraheaded monster of foul mouth diseases from which our vast number of youngsters are suffering.

The good which can be accomplished through this agency is of incalculable vastness, and so tangible will the result be that, once started in the two cities of New York and New Jersey, others will quickly follow, until the breath of the ill-cared-for mouth of the school child shall be a thing of the past, and with it shall disappear a chain of ills which now constitute an enormous drain upon the physical and mental health of the youngster and a more or less useless drain upon the exchequer of the city or the parents.





Central Dental Association of Northern New Jersey.

A regular monthly meeting of the Central Dental Association of Northern New Jersey was held at Davis's Parlors, Newark, N. J., on Monday, November 21, 1910. President Harlan called the meeting to order, and a quorum being present the calling of the roll was dispensed with.

The secretary read the minutes of the last meeting, which were approved as read.

Dr. Straussberg, of the Dinner Committee, stated that his committee desired an expression from the members as to where the annual meeting should be held, and after considerable discussion the following resolution was adopted:

"That the matter be left to the discretion of the Dinner Committee to hold the annual dinner either in New York or New Jersey, as they may decide."

The following applications for membership were reported upon favorably by the Executive Committee:

Harry Kaufman, D.D.S., Newark, N. J.;

Martin H. Whalon, D.D.S., Paterson, N. J.;

and these gentleman were unanimously elected to membership.

The following application for membership was received:

William B. Martin, 88 Broad St., Elizabeth, N. J.; sponsors: Drs. Adelberg, Hardy and Jones.

The application was referred to the Executive Committee.

The President then introduced Herman E. S. Chayes, D.D.S., of New York, who read his paper entitled "Public School Clinics."

Discussion of Dr. Chayes's Paper.

Dr. Ottolengui.

That sounds very Utopian, but there are many things that are to-day which were Utopian a little while ago.

I believe that if we could have a dental infirmary connected with every public school, it would be a good thing.

I was very much interested in the statistics of the essayist, and to learn that there are about one million school children in New York City, of whom there are seven hundred and fifty thousand in the public schools. That means about two hundred and fifty thousand are children whose parents are wealthy enough to take care of them, so that they are in no need of clinics. Through Dr. Merritt, who has given ten years of his life to this work, I have been informed that in the public schools of New York there are two hundred and fifty thousand children whose parents cannot afford to spend any money on their teeth, so that there are about one-third of the public school children who must go without attention, in the absence of free clinics.

Dr. Warrington Lewis, Brooklyn.

A year or so ago I would have thought far more than I do now that it is impossible to get any such thing as has been described by Dr. Chayes For the past seven years, in Brooklyn, I have given a good deal of time to what dental clinics there were, mostly in the hospital line, and have accomplished very little. In Brooklyn there is an organization known as the Brooklyn Board of Charities, and it is practically supported by three or four wealthy men in the city of Brooklyn. Among other things that this Board has done has been the inauguration of a tuberculosis crusade, and about two years ago one of the members got the idea that something might be done for the teeth. That was the beginning of a dental clinic which is now being carried on in Brooklyn quite successfully, but with volunteer workers, and that is the weak point of the whole system. My idea from the first has been to show that it could not be done properly with volunteer workers.

In Brooklyn the clinic opened last August, and only the other day the suggestion was made from the Board of Charities that it was such a success that they thought it would be better, if possible, to pay some one to be on hand all the time, getting volunteers, who have the time to fill in and do what work he could not. That as yet has not materialized, but I do not think there is any doubt at all that it will, in the near future, when the people who have the money, and are back of this movement, can be shown that it is necessary. We all know that it is necessary, but we have not proven it yet.

Last winter I was at the meeting of the Board of Examiners of the Health Board of New York, and the discussion of dental clinics was taken up. Dr. Cronan, the chief of the Board of Examiners of New York, has always taken a great interest in this work, and he and several other examiners made the point that we would have no difficulty in getting the money, if we could prove that the work is needed. He said that proof had been given that the Board of Health is needed, and consequently the members are paid for their services. He also said, "I think I know that a great many of the diseases that you people say are caused by bad conditions in the mouth are so caused, but I cannot prove that; can you?" We said that we do believe so, and he replied, "That will not do, I want some proof; how are you going to prove it?" Various others of the examiners expressed the same views. Dr. Ottolengui, in his editorial last month, struck the nail very much on the head, in the suggestion he made that certain practitioners in different localities take a number of children and prove to the city government that by proper care of the mouths of those children the general health of the child could be improved, and that it would be a saving to the city in the educational scheme.

Dr. Holmes.

I am very glad to have heard this scheme suggested by Dr. Chayes, but it struck me that we are expecting too much in the beginning. Probably when the telegraph was first discovered there might have been some people who believed in building immediately telegraph lines over the entire United States, like a network overhead: such a thing has almost come about now, but that idea at that time would not have been considered seriously. Dr. Chayes has the proper idea, but such results will not be achieved for five or ten years, and we must first find out how it is to be done, and why it is to be done, and we must prove the need, as Dr. Lewis says.

We are undertaking one method here in Newark, and I am not at all satisfied it is the correct method, but it has been difficult to find out just which is the correct one. Already we have shown the authorities in Newark that we have succeeded to some extent, and we have the authorities with us, and they are willing to help us all they can, and in a few years more I think Newark will have a paid operator at the dental clinics.

Dr. George Holmes, the medical supervisor of the Board of Education of the city, spoke at our last meeting of a plan he has in view, which to me is a very feasible proposition, and one that will not take a very large amount of money to carry out. He suggests that the Board of Education should have public school clinics, perhaps one, two, three

or four, or as many as necessary, and that at these clinics all the poor children of the public schools, who should be selected by the medical examiners, or nurses, or dental examiners—as the case might be, should be treated, and at these clinics there should be not only dentists but eye, ear, nose and throat specialists. Such a clinic could be supported at no great expense, and children could be sent there during school hours and still marked present.

Dr. Ottolengui. I would like to have Dr. Holmes tell us just where the patients at the Newark clinic come from at present.

Dr. Holmes. The majority come from the public schools. The medical supervisor of the Board of Education in Newark instituted medical examinations of the children, and in the course of some few years' time he found it more practical to have the examination made by women nurses, who come through the schools and investigate any case they find in order to ascertain what can be done to change existing conditions; and these nurses issue cards to the children directing them to go to the public clinics. They are not compelled to go, and consequently only a very small percentage of those who are sent come, and yet we have a waiting list of about one hundred and fifty-six children at the present time.

Dr. Jones. In Elizabeth we have been very much interested in dental clinics, and we have two there; one, of which I have some knowledge, is held in connection with the Elizabeth General Hospital. We have ten practitioners, who alternate there twice a week from four until six, and it is very gratifying to see the interest that has been shown by the dentists, for they are always there at the appointed time, and we have found the condition of the school children's teeth very deplorable.

Our plan is as follows: When a child applies for treatment in the dental clinic, if the child is in pain, we proceed to relieve it and refer the patient to the Charity Organization Society; the great majority of our patients come through that society, which co-operates with us in this work and investigates the cases wherever possible, and issues a card stating whether the child is able to pay anything or not, and if it is only five or ten cents, we have taken it so that they may not feel that they are paupers.

There is a big field for this, and if the work were undertaken on a larger scale, I think it would be a great advantage to the community at large.

Dr. Morrison. In Paterson we have started a dental clinic in a small way, not at all along the lines of this paper, but we have come here to learn. Our clinic was started by a donation from a Sunday-school, which came as a memorial to a former pastor. I took the money, procured an outfit, and began to work, and then asked for the support of the dentists of Paterson without any success. I visited them personally in vain; but having learned that a thousand dollars can be secured by law from the municipalities by a regularly organized society, I have sought to found such an organization in Paterson, whereby we hope to get enough money to conduct the clinic properly.

It has been suggested that we employ a dental interne to be in attendance all day, and I think that is the proper thing to do, for we know that volunteer work does not meet with the necessities.

We are running our clinic in connection with the Settlement House, and they investigate every case we take up, and see if it is worthy, and I find I cannot cover the work alone, and if I had the support of many of the dentists in town we could hardly cover it, for it is necessary for a man to be there all day, every day in the week.

My idea is that the clinic will only be perfected through the municipalities providing the money therefor.

Dr. Waldron. We have overlooked the fact that we have educated by our clinics those who needed attention along these lines, who could well afford to pay for the work, and I have had five or six cases of orthodontia during the past year, which have come to me by reason of the fact that the children, who never knew before that their teeth could be regulated, were examined by nurses at school. So that not only are we giving charity to the real poor, but we are educating those who are not poor, but who do not know any better.

Dr. Chayes. We know there is a tremendous amount of money being spent, and wasted while it is being spent, for it costs four dollars and seventy cents in the city of New York to give one dollar to charity. It was not so very long ago that Mr. Rockefeller created a fund of $15,000,000 to Christianize the heathen Chinese. What difference does it make to us whether those little yellow men believe in Christianity or believe in their own Confucius? I believe they are just as happy in their own religious life as we are in ours. As a matter of fact, in San Francisco the Christianized Chinese are not desired, and there are conditions needing reformation right in our own country, where Mr. Rockefeller and Mr. Carnegie made, and are still making, their wealth.

This is only suggested as a matter of pointing out the proper road for these rich men to take, and if the dental societies of the various cities and States of this country will get together and raise a cry loud enough, these men will hear it, and heed it, because they are the brainiest men in the world to-day, or else they could not have accumulated the fortunes that they have.

Dr. Holmes spoke of the telegraph, and said that when it was first invented it would not have been thought possible to cover the whole country with it. Does he realize that the matter of dental clinics in connection with the public schools is quite another force in the development of the country? Unless something is done to help those that are being held back, we are going to have an ever increasing number of citizens who are anything but desirable, as was presented to us by the principal of a school in New York at the last annual banquet of the C. D. A.

We cannot possibly close our eyes to the necessity for this work, and the volunteer clinic will not suffice. We are full of enthusiasm when it first starts, but gradually this fades away, and we must have the co-operation of the rich, and we will have it if you can bring conditions to their attention, if you can make them read what is being said about it, and if these men will turn their hearts to the cry of the little children it will not take a hundredth part of the comforts they give their own little ones to help them.

If I have the mission of going to Mr. Rockefeller I will put him up against the wall and I will tell him to let the teeth of his own children be neglected for a year, and then let him see whether there is any change in the general health of the children, and he will soon find out the difference. He might not be willing to try the experiment on his own grandchild, but he would be willing to listen to me and give us the money to start with in cities like Newark and Jersey City, and if so we will soon have a system of dental clinics in connection with every public school that will make you feel proud of the fact that you started the movement and satisfied that you have done your share toward maintaining a standard of health impossible to obtain in any other way, and that you have helped those who could not and cannot help themselves. (Applause.)

A vote of thanks was extended to Dr. Chayes for his very excellent paper.

On motion the meeting adjourned.

EDITORIAL

The Re-Organization of the National Dental Association.

At the Denver meeting a Committee on Reorganization of the National Dental Association was appointed, and this committee was instructed to request each State Society to appoint a representative, who should act as a delegate to what might well be termed a "Constitutional Convention," although in fact these "delegates" are merely to be present to inform the Committee as to the wishes of the several State Societies, after which the Committee is expected to formulate such a constitution as will best serve to weld together a National body, representative of the greatest possible number of sections of this vast country.

In a somewhat different manner, an attempt was made prior to the Denver meeting to get some expression of opinion from our State bodies. Of this effort and its result Dr. H. C. Brown, the National Secretary, has expressed himself in a paper read before the West Virginia State Dental Society. Dr. Brown said:

"As corresponding secretary and chairman of the Committee on State and Local Societies, I was directed to ascertain the attitude of the State Societies upon this question, and a systematic correspondence was inaugurated with that purpose in view. I submitted with this correspondence a list of questions, and requested the secretaries to furnish this and the other information desired upon the blank where space had been reserved for that purpose.

"I herewith incorporate that which was submitted:

"Does your society, by official action, favor a revision of the constitution and by-laws of the National Dental Association with provision for State Societies becoming components thereof; annual dues not to exceed two dollars ($2.00) per member, which includes subscription to the *National Dental Journal?*

Will your society become a component organization of the National, if such a constitution and by-laws are adopted?

If the above is not agreeable to your society, what suggestions do they offer which will put the National on a basis of greater usefulness?

What annual dues do you collect?

What is your present paid membership?

How many in attendance at your last meeting?

How many *members* in attendance at your last meeting?

Give approximate number of dentists practicing in your State.

Give name and address of newly elected president and secretary.

President:

Secretary:

Give place and date of next meeting.

Secretary.

Please fill in this blank and mail to

H. C. Brown, Cor. Sec'y,
185 East State St.,
Columbus, Ohio.

"Reports were received from only about sixty per cent. of those addressed. It is to be regretted that so large a percentage of the secretaries, through negligence or indifference, failed to furnish the information requested. The office of secretary in a dental society is a responsible position, and no member should be elected to, or accept, such a position unless he possesses at least some qualifications and is willing to give his best efforts in the discharge of his duties. A secretary failing to give due consideration to a communication received from an official of a similar organization, addressed to him as the accredited official of the organization which has thus honored him, is both discourteous to a co-worker and disloyal to his fellow-members."

Dr. Brown is quite right in criticizing the State Society Secretaries for failing to reply to such a letter from the Secretary of our National Association. If State Societies are so much interested in their own little localities that they have not time at an annual session even to consider the proposition of amalgamating into one great National Association, then there is little reason for reorganizing along these lines and then inviting the State Societies to come in afterwards. How ridiculous our National would appear with a constitution based upon State representation as constituent units if only a few States were to accept the new method of representation!

Manifestly the plan of holding a meeting whereat specially appointed delegates may speak for their States is the only practical method of adopting a constitution similar to that of the American Medical Association, if such a thing be possible. But no such meeting can occur unless the State Societies show more interest this year than they did last. Ohio has already met and passed a resolution appointing a delegate and an alternate, and indorsing the idea that members of a State or Local Society may be eligible to join the National, the fee to be not more than two dollars annually.

Questions at Issue.

A draft of a constitution similar to that of the American Medical Association is already in the hands of the Committee, but in its present shape it could not be profitably adopted until a number of points have been fully discussed and modified to suit the will of the greatest number.

The Constitution of the American Medical Association is a formidable document, or at least it appears to be. A close study of it, however, discloses that it is really a wonderful instrument. Nothing is left to chance. There are no quibbles, and no opportunity for discussion as to the meanings of words, phrases or paragraphs. Every step in the conduct of the association is clearly described.

In formulating a similar constitution for our National Dental Association the effort was made to provide for all contingencies in an equally comprehensive manner. This was not completely possible, because conditions in the dental world differ in many vital respects from those in the medical.

Briefly stated, the proposition to reorganize "along the lines of the American Medical Association" means this:

First. A National body composed of State Societies as constituent units.

Second. Annual meetings divided into two parts, executive and scientific. The business, or executive, part of the meeting is relegated to a "House of Delegates" composed of delegates from the State Societies, in proportion to their numerical size. To the scientific meetings all are welcome, but again, these meetings are held as meetings of "Sections," each section having its own officers.

Third. The American Medical Association conducts a Journal, which goes to all members not in arrears for annual dues.

It is, of course, possible to adopt a constitution having these features without entirely copying the Medical Association's constitution, but there are some difficulties.

The Question of Dues.

The first great problem is that of dues. One of our very enthusiastic and impulsive Western editors cut this Gordian knot long ago with a single slash of his bowie knife. "We ought to get six or eight thousand members," quoth he, "and a dollar each would be enough for the National. So we could have annual dues of five dollars; one dollar for the National and two each for the State and the Local Society."

This idea of paying the National one dollar annually because at that low figure we could have six or eight thousand members reminds one of the manufacturer who asked a competitor how he could offer his wares at a price which he knew was less than cost. With a grand wave of the arms came the reply: "Think of the vast amount of business I will do!"

The trouble is that such methods of business spell bankruptcy. One dollar dues in the National and a Journal presented to each member simply means that the larger the membership the greater the deficit in the treasury.

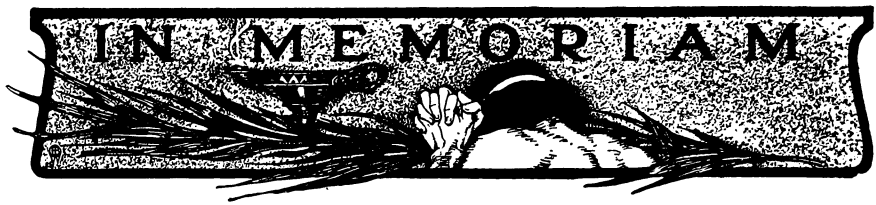
The proposal of a five dollar due to cover the three Societies, National, State and Local, is equally untenable from the viewpoint of the State and Local Societies. Indeed, Local, or what are known in New York City as District Societies, have dues now of five dollars annually, and spend it all.

However, it is not necessary for the National to attempt to dictate as to the dues of either State or Local Societies; it need only regulate the cost of its own membership. But it is not practicable to greatly reduce the present dues of five dollars annually, unless a large influx of members be guaranteed. It probably will be wisest to provide that the dues be five dollars annually, except where an entire State Society should join in a body, when dues to such members may be two dollars annually.

By this means it will be seen at once that we would have two classes of members, those who join as individuals, paying five dollars annually, and those coming in with their entire State Societies, and paying two dol-

lars per man. This would create a new problem to be adjusted and is open to objections, as pointed out editorially heretofore. (See ITEMS OF INTEREST, October, 1909, page 784.) In the American Medical Association all the State Societies are constituent members, and therefore it is easy to compute their proper representation in the House of Delegates. Under the present conditions in the Dental Societies it is doubtful if any great number of State Societies would join, enrolling their complete membership. Consequently, if business is to be conducted by a House of Delegates some means must be found by which all States would be fairly represented. Perhaps at the start the House of Delegates might include only one delegate from each State Society, a method similar to our United States Senate, wherein all States have equal representation.

These difficulties, and others that will undoubtedly arise, can all be adjusted, provided our State Societies take a part of one session for discussion of this subject, the appointment of a delegate and the instruction of their representative. If all States would follow the example of Ohio, we should readily formulate a constitution for a large and truly representative National Dental Association during the Cleveland meeting.



Professor James H. Harris.

A Tribute.

By A. W. Sweeney, D.D.S., Baltimore, Md.

The death of Professor James H. Harris, of the Dental Department of the University of Maryland, has removed from our midst a most striking and interesting figure, one of the few whom we have known in recent years, who, in the broadest and fullest sense, was worthy to be classed among the grand old men of the dental profession.

Though he had gone well beyond the scriptural limit of "three score years and ten," his activity, both as a teacher and as a practitioner, was maintained with a zeal and enthusiasm rarely equalled by far younger men, and throughout the whole of his long career, in both fields of his labor, his most earnest efforts were ever dedicated to the maintenance of the highest professional ideals. To the last he responded to the call of duty. Though far from well for some weeks, he would not desert his post, and in the morning of the day on which he was forced to take to his bed he delivered his last lecture to his class, and he saw patients in his office during the afternoon. Five days later he answered to the roll-call.

In the course of a somewhat checkered professional career, it has fallen to the writer's lot to be thrown rather intimately with some of the most distinguished members of the dental profession, to see them at their daily work, and to closely note their methods and compare results, and he now states, without reservation or qualification, that the superior of Dr. Harris as an operator he has never seen; aye, and in some respects he has yet to meet his equal. As in physical stature he towered above all save the very tallest, so, and yet more so, in his professional attainments did he stand among his colleagues like Saul of Tarsus among his brethren. Above and beyond all else, in one most striking and notable particular, he stood absolutely alone, unapproached, literally in a class by himself.

All of us who have passed a reasonably full number of years in professional life have occasionally met with men of marked and exceptional ability; but how invariably have we noted that when one so gifted has attained to a ripe age, the gathering years have brought with them the unfailing evidences of decaying powers and sadly decreased efficiency. In contemplating such a case, it has been our habit to shake our heads sadly and say, "Ah, yes; poor, old man! He was magnificent in his day, but his day has passed. He is no longer what he once was."

That could never have been truthfully said of Dr. Harris. He literally had no period of decadence. With him his last days were truly his best days, and in the fullness and ripeness of his years his genius reached the ultimate splendor of its flowering. Though, as was unavoidably the case, his physical powers gradually lessened under the weight of increasing years, the brilliancy of his mental endowment was more than sufficient to counterbalance every such loss. So clear and true were his perceptions, so unerring his judgment, so thorough his capacity to profit by his vast store of experience and his close and comprehensive course of study, that he was enabled to make of his entire long career a continuous and unchecked advance.

Prof. Harris an Ideal Operator.

He was reckoned, and justly so, a practitioner of unrivalled skill when he first came among us more than a full third of a century ago; but when, for the last time he laid down his instruments, he was unquestionably an abler, a finer, a more highly finished and more efficient operator than when in his full maturity. Only a few weeks ago, while conversing with a gentleman who is himself an operator of no mean ability, and an unusually close and exacting critic, mention was made of two large and exceedingly difficult gold fillings made by Dr. Harris a few years since. The gentleman stated that he had examined them, and added, with the utmost emphasis of expression, "No man on earth could possibly make two better fillings." Those masterpieces came from the hands of the subject of this sketch after he had passed his seventieth milestone; and less than two years ago, the writer stood beside his chair and saw him introduce two large gold fillings which are absolutely above criticism, with an ease and celerity which could not be correctly designated otherwise than as wonderful; an ease by no means limited to its effect upon himself, but exhibited in conjunction with a gentleness and delicacy in his handling of his patient which proved absolutely fascinating to contemplate.

As a teacher, his attainments were in no degree less brilliant than his skill as a practitioner. He possessed, in rare measure, the ability to

impart and to arouse to the point of enthusiasm the interest of the best element among his pupils.

Prof. Harris an Ideal Teacher.

For many years he delivered nearly all his lectures beside the chair, illustrating, step by step, with masterly demonstrations. While he covered practically the entire field of operative dentistry, a great share of his time was devoted to the most difficult class of gold fillings. Rarely, indeed, did he confine a demonstration to the prescribed limit of one hour. Quite commonly he would occupy fully two hours, and often and again would he become so engrossed in a series of most brilliant operations, spurred on by his own enthusiasm and the rapt attention of his pupils, that he would work until far into the afternoon; and that at a time when he had a very extensive and valuable private practice. Then, many an evening, a little group of students would gather in his office, where, until far into the night, they would listen with the keenest interest to his brilliant and instructive conversation. By such unflagging devotion to duty, by unwavering enthusiasm and by constant self-forgetfulness, demonstrated throughout nearly forty years, he earned for himself the right to be classed among the greatest of our educators.

Prof. Harris an Ideal Man.

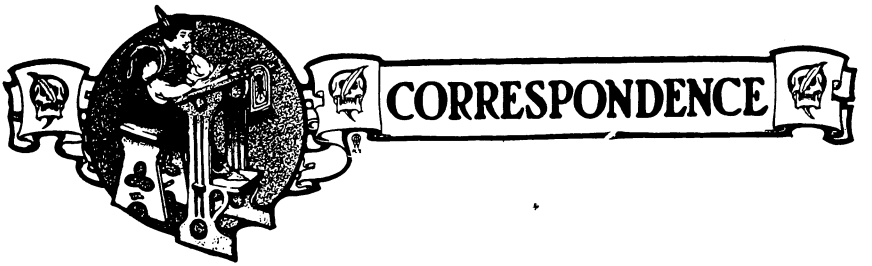
Yet superlatively great as were his professional attainments, they by no means expressed the sum total of his attractive qualities. Indeed, it was only by virtue of his many splendid personal traits that he was able to reach and maintain his preëminence. Had his been a cold nature, warped and contracted by selfishness, dominated by greed of gain and blinded by an exaggerated estimate of his personal importance, we should have been robbed of his splendid example as a practitioner and his invaluable service in the cause of education. Greatness in the divine art of healing is only reached through unfailing fidelity, generosity and self-sacrifice. He was true, honest and sincere, courteous and affable to strangers, staunch and ever loyal to his friends. His suavity of manner was never used as a cloak for special occasions, but was the spontaneous outward showing of innate kindliness and overflowing good will. A true son of the Southland, he was filled with its spirit of simple, unostentatious hospitality. His home was open to either friend or stranger. Equally open were his heart and hand, and, in proportion to his means, few have been more nobly generous in their beneficences. His life was clean, pure and useful. In every one of its relationships he measured up most fully to a very high standard of excellence. He was a dutiful son, a kind and most helpful brother, a devoted, indulgent husband and father, a genial, ever courteous acquaint-

ance and an ideal friend. Though that life has now ended, though those wonderfully skillful hands are folded in rest and the gentle, kindly spirit which moved them to so much well-expended labor is now but a sad, sweet memory, his work is not yet finished. It lives with us, and through it he speaks to us, with a silent but most splendid eloquence; and so long as those of us who know him live, the recollections of his sterling worth and his many lovable traits of character will linger, like the perfume of the sweetest, purest flowers ever clustering in perennial freshness and fragrance, in the inmost and most sacred chambers of memory.

It was the writer's privilege to know him very intimately for more than thirty years. It is to that intimacy that he is indebted for numberless valued favors and for a large share of what has proven of service in his weak and stumbling efforts to walk in the pathway so plainly outlined by his unfaltering footsteps; and it is in grateful recognition of those many obligations that he now makes his small and most inadequate offering—though it is all he has to give—the poor tribute of a few feeble words. Yet, mingled with his keen realization of his poverty of resources, there is found the consoling reflection that even the most superbly gifted by nature and the most lavishly endowed by fortune can do nothing for friends who have left them, beyond giving expression to kind and loving remembrances.

Dr. George Allen.

As we go to press we learn with deep regret of the sudden death of Dr. George Allen, one of New York's best and most respected practitioners. Dr. Allen was present and sat at the guest table at the recent banquet tendered to Professor Black by the Second District Dental Society, and no one who saw him there would have suspected that within a week he would be stricken with apoplexy. A complete obituary will appear in the next issue.



To the Editor of ITEMS OF INTEREST:

Dear Sir—I read with considerable interest the paper by Dr. Roessler in the November issue of ITEMS OF INTEREST, commented quite freely upon it, and was urged to answer it, but it seemed almost unnecessary. The criticisms of Drs. Harris and Vuilleumier in the December number appear hardly adequate to the occasion. They fail in showing the greatest damage done by a paper such as this under consideration. Dr. Roessler's paper purports to be a scientific article. It is presented to, and accepted by, a State Dental Society, presumably composed of scientific men, and the inevitable effect upon every careful reader is to lower the scientific standing of the dental profession. This, to my mind, is what does positive harm. It ought not to be necessary to refute such obvious misstatements as that sugar is crystallized acid, or that the stomach wall, being soft tissue, will be more easily acted upon by dilute hydrochloric acid than will the teeth, or a number of other inaccuracies of the doctor's paper.

It *is* necessary that dental societies take some steps to prevent the publication and broadcast distribution of literature of this stamp, for it is certainly better "Not to know so much, than to know so many things that are not so."

I am very anxious to have dentistry "make good" as a branch of recognized science, *i.e.*, medicine.

To do this, however, it is essential that we eliminate gross error, all errors as far as possible from our dental publications, and if we are to have chemical articles let us have them correct, as far as well-established facts are concerned.

One word in regard to Dr. Harris's article. As a Bachelor of Science he should not lead us to infer that glucose is an alcohol, for when the alcohol radical at either end of the chain has been oxydized to a —CHO group, the substance becomes an aldehyd.

An article intended to instruct should not mislead in any particular.

Trusting that my motive of criticism may not be misunderstood, I am,

Sincerely yours,

H. CARLTON SMITH.

SOCIETY ANNOUNCEMENTS

National Society Meetings.

NATIONAL DENTAL ASSOCIATION, Cleveland, Ohio, July 25th to 28th, 1911. Secretary, Dr. H. C. Brown, 185 E. State St., Columbus, O.

SOUTHERN BRANCH OF THE NATIONAL DENTAL ASSOCIATION, Atlanta, Ga., April 4, 5, 6, 1911. Secretary, Dr. W. G. Mason, Tampa, Florida.

AMERICAN SOCIETY OF ORTHODONTISTS, September 20, 21, 22, 23, 1911, Boston, Mass.
Secretary, Dr. F. C. Kemple, 576 Fifth Avenue, New York.

State Society Meetings.

ALABAMA DENTAL ASSOCIATION, Montgomery, Ala., May 9, 1911.
Secretary, Dr. E. W. Patten, Selma, Ala.

ARKANSAS STATE DENTAL ASSOCIATION, Pine Bluff, Ark., about June 1st.
Secretary, Dr. I. M. Sternberg, Fort Smith, Ark.

CALIFORNIA STATE DENTAL ASSOCIATION.
Secretary, Dr. C. E. Post, 126 Stockton St., San Francisco, Cal.

COLORADO STATE DENTAL ASSOCIATION, Boulder, Colo.
Secretary, Dr. Chas. A. Monroe, Willard Block, Boulder, Colo.

CONNECTICUT STATE DENTAL ASSOCIATION.
Sec'y, Dr. Robert H. W. Strang, Sanford Bldg., Bridgeport, Conn.

DELAWARE STATE DENTAL SOCIETY.
Secretary, Dr. Warren Combs, 410 Delaware Ave., Wilmington, Del.

FLORIDA STATE DENTAL SOCIETY, Pensacola, Fla., June 20, 1911.
Secretary, Dr. W. A. Dean, Tampa, Fla.

GEORGIA DENTAL SOCIETY, Macon, Ga., June 8, 1911.
Secretary, Dr. DeLos H. Hill, Grant Bldg., Atlanta, Ga.

ILLINOIS STATE DENTAL SOCIETY, Peoria, Ill., May 9, 10, 11, 12, 1911.
Secretary, Dr. J. F. F. Waltz, Decatur, Ill.

INDIANA STATE DENTAL ASS'N, Indianapolis, Ind., May 16, 17, 18, 1911.
Secretary, Dr. Otto U. King, Huntington, Ind.

IOWA STATE DENTAL SOCIETY, Des Moines, May 2, 3, 4, 1911.
Secretary, Dr. W. G. Crandall, Spencer, Ia.

KENTUCKY STATE DENTAL ASSOCIATION.
Secretary, Dr. W. M. Randall, Louisville, Ky.

MAINE DENTAL SOCIETY, Fabyas, N. H., June 27, 28, 29, 30, 1911.
Secretary, Dr. I. E. Pendleton, Lewiston, Me.

MARYLAND STATE DENTAL ASSOCIATION.
Secretary, Dr. F. F. Drew, 701 N. Howard St., Baltimore, Md.

MASSACHUSETTS DENTAL SOCIETY.
Secretary, Dr. C. W. Rogers, 165 Howard St., Dorchester, Mass.

MICHIGAN STATE DENTAL SOCIETY.
Secretary, Dr. Marcus L. Ward, Detroit, Mich.

MINNESOTA STATE DENTAL ASSOCIATION.
Secretary, Dr. B. A. Sandy, Andrus Bldg., Minneapolis, Minn.

MISSISSIPPI DENTAL ASSOCIATION, Hattiesburg, Miss., May, 1911.
Secretary, Dr. L. B. Price, Corinth, Miss.

MONTANA STATE DENTAL SOCIETY, Helena, Mont., June 2, 3, 1911.
Secretary, Dr. R. H. Severance, Great Falls, Mont.

NEBRASKA STATE DENTAL SOCIETY, Lincoln, Neb., May 16, 17, 18, 1911.
Secretary, Dr. J. H. Wallace, 212 Brown Block, Omaha, Neb.

NEW MEXICO DENTAL SOCIETY.
Secretary, Dr. L. E. Erwin, Carlsbad, New Mexico.

NEW HAMPSHIRE STATE DENTAL SOCIETY, Fabyas, N. H., June 27, 28, 29, 30, 1911.
Secretary, Dr. F. F. Fisher, 913 Elm St., Manchester, N. H.

NORTH CAROLINA DENTAL SOCIETY, Morehead City, N. C.
President, Dr. A. H. Fleming, Louisburg, N. C.

NORTH DAKOTA STATE DENTAL SOCIETY, May 11, 1911.
Secretary, Dr. F. A. Bricker, Fargo, N. Dak.

OHIO STATE DENTAL SOCIETY.
Secretary, Dr. F. R. Chapman, Schultz Bldg., Columbus, Ohio.

OREGON STATE DENTAL ASSOCIATION.
Secretary, Dr. F. H. Walgamitt, Medical Bldg., Portland, Ore.

PENNSYLVANIA STATE DENTAL SOCIETY.
Secretary, Dr. Luther M. Weaver, 7103 Woodland Ave., Philadelphia, Pa.

RHODE ISLAND DENTAL SOCIETY.
Secretary, Dr. C. A. Carr, 209 Spring St., Newport, R. I.

SOUTH CAROLINA DENTAL ASSOCIATION, Columbia, S. C.
Secretary, Dr. W. B. Simmons, Piedmont, S. C.

SOUTH DAKOTA STATE DENTAL SOCIETY, Aberdeen, S. D., May 10 and 11, 1911.
Secretary, Dr. M. R. Hopkins, Aberdeen, S. D.

TEXAS STATE DENTAL ASS'N, San Antonio, Tex., May 11, 12, 13, 1911.
Secretary, Dr. J. G. Fife, 736 Wilson Blvd., Dallas, Tex.
UTAH STATE DENTAL SOCIETY.
Sec'y, Dr. W. G. Dalrymple, 2421 Washington Ave., Ogden, Utah
VERMONT STATE DENTAL SOCIETY, Fabyas, N. H., June 27, 28, 29, 30, 1911.
Secretary, Dr. H. F. Hamilton, Newport, Vt.
WEST VIRGINIA STATE DENTAL SOCIETY.
Secretary, Dr. F. L. Wright, Wheeling, W. Va.
WISCONSIN STATE DENTAL SOCIETY, Eau Claire, Wis., July 11, 12, 13, 1911.
Secretary, Dr. O. G. Krause, Wells Bldg., Milwaukee, Wis.

Southern Branch of the National Dental Association.

The next annual meeting of the Southern Branch of the National Dental Association will be held in Atlanta, Ga., April 4, 5 and 6, 1911. Headquarters, Piedmont Hotel.

Tampa, Fla. W. G. MASON, Cor. Secretary.

Massachusetts Dental Society.

The forty-seventh annual meeting of the Massachusetts Dental Society will be held May 11, 12, 13, 1911, at the Hotel Somerset, Boston. A most interesting and instructive program has been arranged.

Progressive practitioners of dentistry residing in the State of Massachusetts, who are not members of the Massachusetts Dental Society, are cordially invited to membership.

CHARLES W. RODGERS, Secretary.
165 Harvard St., Dorchester, Mass.

North Philadelphia Association of Dental Surgeons.

The first annual meeting of the North Philadelphia Association of Dental Surgeons was held on Wednesday evening, January 11th.

The following officers were elected for the ensuing year:

President, R. E. Denney; Vice-President, W. J. McKinley; Secretary, W. Matlack; Treasurer, W. C. T. Bauerle; Editor, J. H. Drexler.

At the February meeting the committee have arranged a special program, followed by a smoker and refreshments.

This association meets on the second Wednesday of each month at Carnegie Hall, Sixth Street and Lehigh Avenue.

Philadelphia, Pa. WARREN MATLACK, Secretary.

Examination of Dentists for the Army.

The Surgeon-General of the Army announces that he intends to hold examinations to establish an eligible list, from which appointments to the Dental Corps will be made as vacancies occur.

Applicants for appointment as dental surgeons in the U. S. Army will be authorized to present themselves at the nearest military post to their homes, at which a medical officer is stationed, for examination as to physical qualifications for employment, and those found physically qualified will be invited to report at Columbus Barracks, Columbus, Ohio, or Fort McDowell, Angel Island, California, early in March, 1911, for the professional examination. No allowance can be made for expenses incurred in undergoing these examinations.

Application blanks can be procured upon application to the surgeon-general of the army. The essential requirements for securing an invitation are that the applicant shall be between 24 and 30 years of age, a graduate of a standard dental college, and shall be of good moral character and habits.

Army dentists are employed under a three years' contract at the rate of $150 per month; are entitled to traveling allowances and suitable quarters; they have the privilege of purchase of supplies at the army commissary. The hours of official duty are from 9 A. M. to 4 P. M., although they are subject to emergency calls. During other hours they are permitted to treat persons not entitled to gratuitous services with their own materials.

Annual Clinic of the G. V. Black Dental Club of St. Paul.

The annual meeting will take place at St. Paul on February 16-17. 1911, at the old State Capitol. The operative clinic is in the hands of the members and friends of the club and, as in the past, it will be along the usual lines.

Doctors Searl, Finn, F. S. and C. H. Robinson, F. S. and W. D. James, Gallagher, Fawcett, Woodbury, Conzett, A. D. Black, Crandall, Beemer, Clack, Richardson, Rawlings, G. D. and W. H. K. Moyer, Yerke, C. N. Booth, Jones and others, will make operations.

Dr. E. T. Tinker, of Minneapolis, will make a cast gold inlay operation.

Dr. C. L. Topliff, of Decorah, Iowa, will be present, and prepared to demonstrate his method of removing impacted third molars.

Table Clinics.

These demonstrations will be in the hands of Drs. C. N. Johnson, F. B. Kremer, O. C. Zieger, C. A. Hintz, C. P. Peterson, and a number of other men yet to be heard from.

It seems only necessary to say that Dr. J. B. Ridout will demonstrate on both days of the clinic to have the usual interest awakened in what he may do.

At this writing (Dec. 20th), it is not possible to speak of the essayists beyond saying that on Thursday evening, Feb. 16th, Dr. G. V. Black will give an illustrated lecture, and Dr. C. N. Johnson will lecture Friday, Feb. 17th. There will be several other gentlemen who will also read essays.

As all available space has been taken by the exhibitors, there surely will be such a display of the newer things as to interest everybody who attends the clinic.

The profession of the U. S. and Canada is cordially invited to meet and take part with us.

For all information, address

DR. R. B. WILSON, Secretary.
American National Bank Building, St. Paul, Minn.

New Orleans College of Dentistry—Dental Department of The Tulane University of Louisiana.

At the annual meeting of the Odontological Society, of New Orleans, held January 11, 1911, the following officers were elected to serve for the ensuing year:

E. L. Fortier, D.D.S., President; St. Clair Duke, D.D.S., Vice-President; Alfred A. Leefe, D.D.S., Secretary-Treasurer; Executive Committee: F. H. Field, D.D.S., Chairman; T. J. Wingrave, D.D.S.; E. B. Ducasse, D.D.S.

New Orleans, La.

ALFRED A. LEEFE, Secretary.

St. Louis Society of Dental Science.

The St. Louis Society of Dental Science elected the following officers for the ensuing year: President, S. H. Voyles; Vice-President, J. P. Marshall; Treasurer, E. J. Lenzen; Curator, J. C. Gault; Secretary, Val. H. Frederich; Executive Committee, Edward C. Haverstick, C. O. Simpson, G. H. Westhoff, J. C. Gault, C. S. Dunham.

Resignation of the New Jersey Board of Examiners from the National Association of Dental Examiners.

The following resolution, offered by Dr. H. S. Sutphen at the December meeting of the New Jersey Board at the State House, Trenton, N. J., speaks for itself:

WHEREAS, The National Association of Dental Examiners, in the minds of many, both in and out of the State Examining Boards of the country, has concluded its usefulness as an active body,

WHEREAS, This fact is proven by the appointment of the Joint Tabulating Committee, which has nullified the efficient work of the Tabulating Committee of the National Association of Dental Examiners, and,

WHEREAS, The untiring work of seven years of Dr. Alphonso Irwin, of the New Jersey State Board, in compiling and tabulating the results of over ten thousand State Board examinations, which was rendered of no lasting good, because of the inaction of the Joint Tabulating Committee, and,

WHEREAS, After twenty-four years' activity of the New Jersey Board in promoting the interests of the National Association of Dental Examiners, and so of the profession in general, it finds itself handicapped in future work.

Therefore, the New Jersey State Board tenders its resignation as a member of the National Association of Dental Examiners, and authorizes its Secretary to forward this resignation to the Secretary or the President of the National Association of Dental Examiners.

State House, Trenton, N. J., Dec. 7, 1910.

Offered by Dr. H. S. Sutphen.

CHAS. A. MEEKER, Secretary.

Chicago Dental Society.

At the regular meeting of the Chicago-Odontographic Society, held December 20, 1910, in the Chicago Public Library Building, the name of the society was changed from the Chicago-Odontographic Society to the Chicago Dental Society, and the following officers were elected for the ensuing year:

President, G. W. Dittmar; Vice-President, G. N. West; Treasurer, F. E. Roach; Secretary, T. L. Grisamore; Librarian, E. D. Coolidge. *Board of Directors, elected*—R. Beck, L. F. Bryant, L. E. Bake, J. P. Smith. *Board of Directors now stands*—R. Beck, G. M. Gallie, 1 year; A. D. Black, L. F. Bryant, 2 years; J. P. Smith, L. E. Bake, 3 years.

Board of Censors—P. B. D. Idler, Chairman; H. C. Peisch, A. M. Hewett. *Organization Committee*—Wm. H. G. Logan, Chairman; F. W. Gethro, R. J. Cruise.

T. L. GRISAMORE, *Secretary.*

Class of 1885, N. Y. C. D.

Graduates of the New York College of Dentistry, class of 1885, please send name and address to M. B. Brinkman, D.D.S., 270 Main St., Hackensack, N. J.

Class of 1891, N. Y. C. D.

The twentieth anniversary of the class of 1891, New York College of Dentistry, will be celebrated by a dinner to be held in New York City during the week of February 20, 1911.

All members of above class not receiving notice, kindly send address to David C. Baker, 27 West 33rd St., New York City.

Union Meeting, Maine, New Hampshire and Vermont Dental Societies.

Union meeting of the Maine, New Hampshire and Vermont Dental Societies will be held at the Fabyan House, Fabyas, N. H., June 27-28-29-30, 1911. All Ethical Dentists are invited to be present.

FRED F. FISHER,
Secretary New Hampshire Dental Society.
Manchester, N. H.